MAY 1958

NEWS MAGAZINE . . .

w food products, processing developments and control:
ages of practical know how on these, other subjects
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FOOD PROCESSING®

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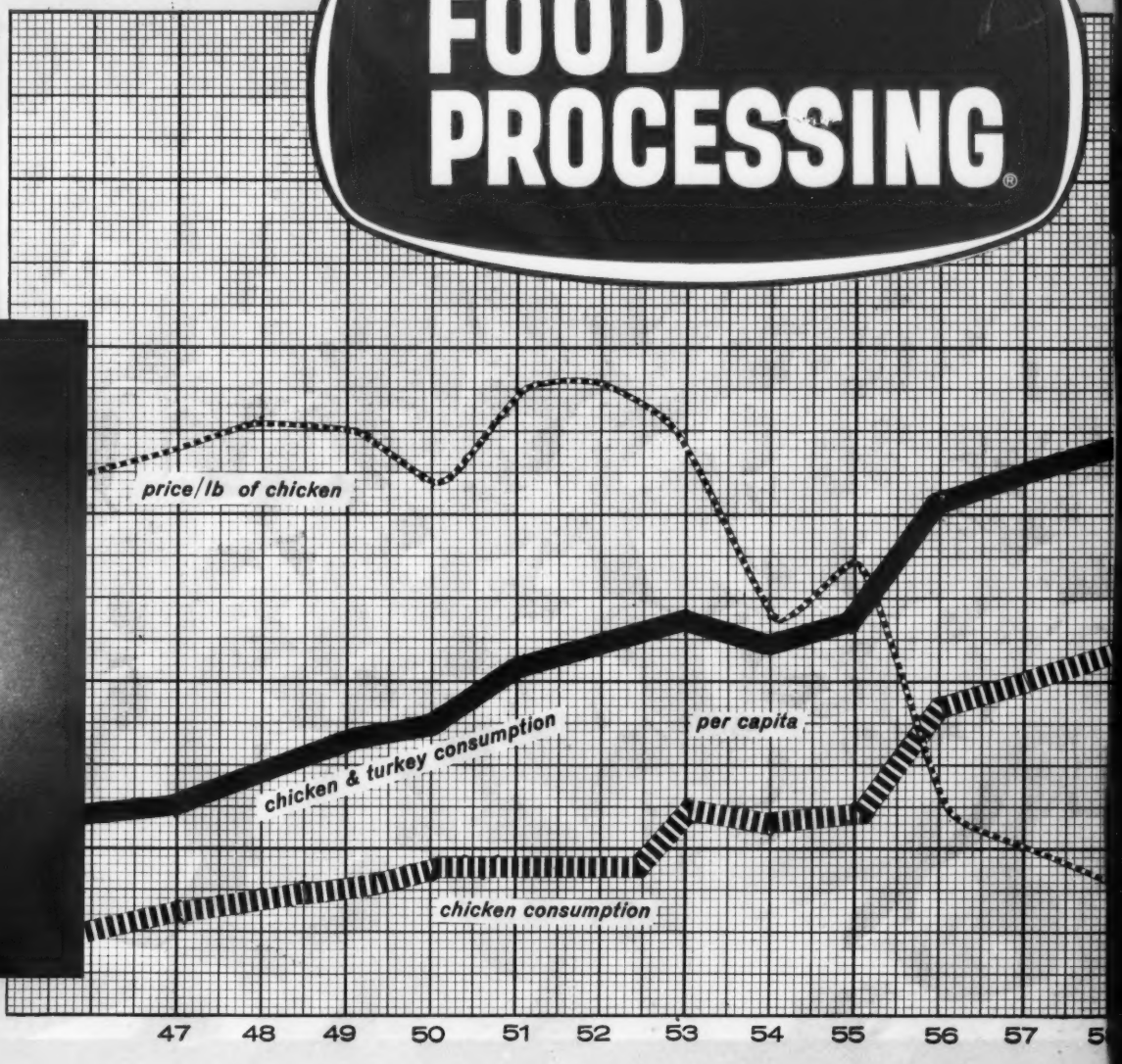
liff Carpenter



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that's interesting

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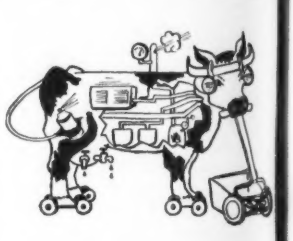

This machine is also equipped with a central heating plant, pumping system, and air-condtioning.

Although mysterious and secret, this plant is unpatented. It is available in various sizes, colors, and output capacity, ranging from 1-20 tons of milk/yr.

From University of California's *Agricultural News Digest.*

Famishing Americans

Food fads, freak diets, and lack of knowledge of good nutrition are creating one of the nation's major health problems, revealed Charles B. Shuman, president of the American Farm Bureau Federation, at recent National Food Conference in Washington, D.C.

Specifically, 29% of American households are not obtaining amount of calcium recommended by the National Research Council; 25% do not get enough vitamin C, and 19% not enough riboflavin. Seventeen percent of diets are short on thiamine, 16% on vitamin A, 10% on iron, 9% on protein, and 7% on niacin.

Tea for two hundred

First automatic machine to make and serve tea in quantity is available to the food service industry. Unit is hoped-for solution to basic problem revealed by recent tea industry marketing studies. These showed that people drank only half as much tea when "eating out" as they drank at home. Reason, in most cases, was inability of the food service operator to match the homemade product due to lack of adequate tea-brewing equipment.

FMC TeaMaker, developed by Food Machinery & Chemical Corp., San Jose, Calif., in cooperation with National Restaurant Assn. and the Tea Council, provides up to 200 cups/hr of high quality hot or iced tea. Compact model requires minimum counter space, incorporates economy and efficiency features resulting from on-location testing of pre-production units over 3 yr period.

Half-stiff wine offers dizzying prospect

Frozen wine in plastic pouches is one of new "could be" frozen food developments, reported Harvey Hearl of Continental Can Co. at recent National Assn. of Frozen Food Packers convention. Idea is to use in preparing such dishes as Veal Scallopini, although direct use is legal in some states. Since wine has alcoholic content, it does not freeze in way vegetables do, but comes out half-frozen.

Handy Andes transplant

Quinoa, a highly nutritive plant used over the centuries for food and animal feed in the high Andes of South America, is being planted experimentally on Greenland's stony soil. Its seeds are ground as cereal, and the leaves are eaten raw, cooked as a pot herb, made into beer, soup, and poultry and cattle feed. US Navy is conducting the seeding project.

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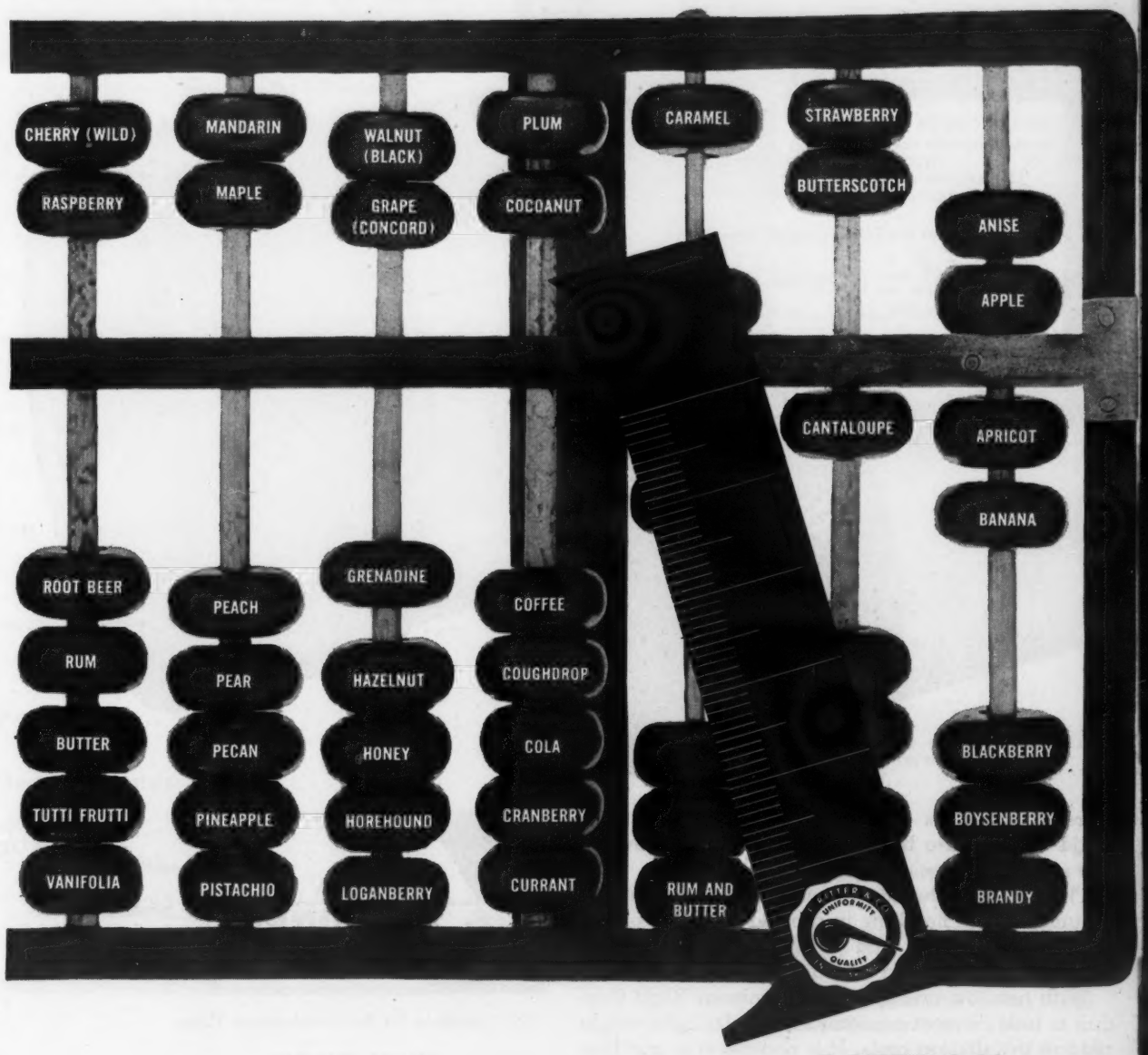

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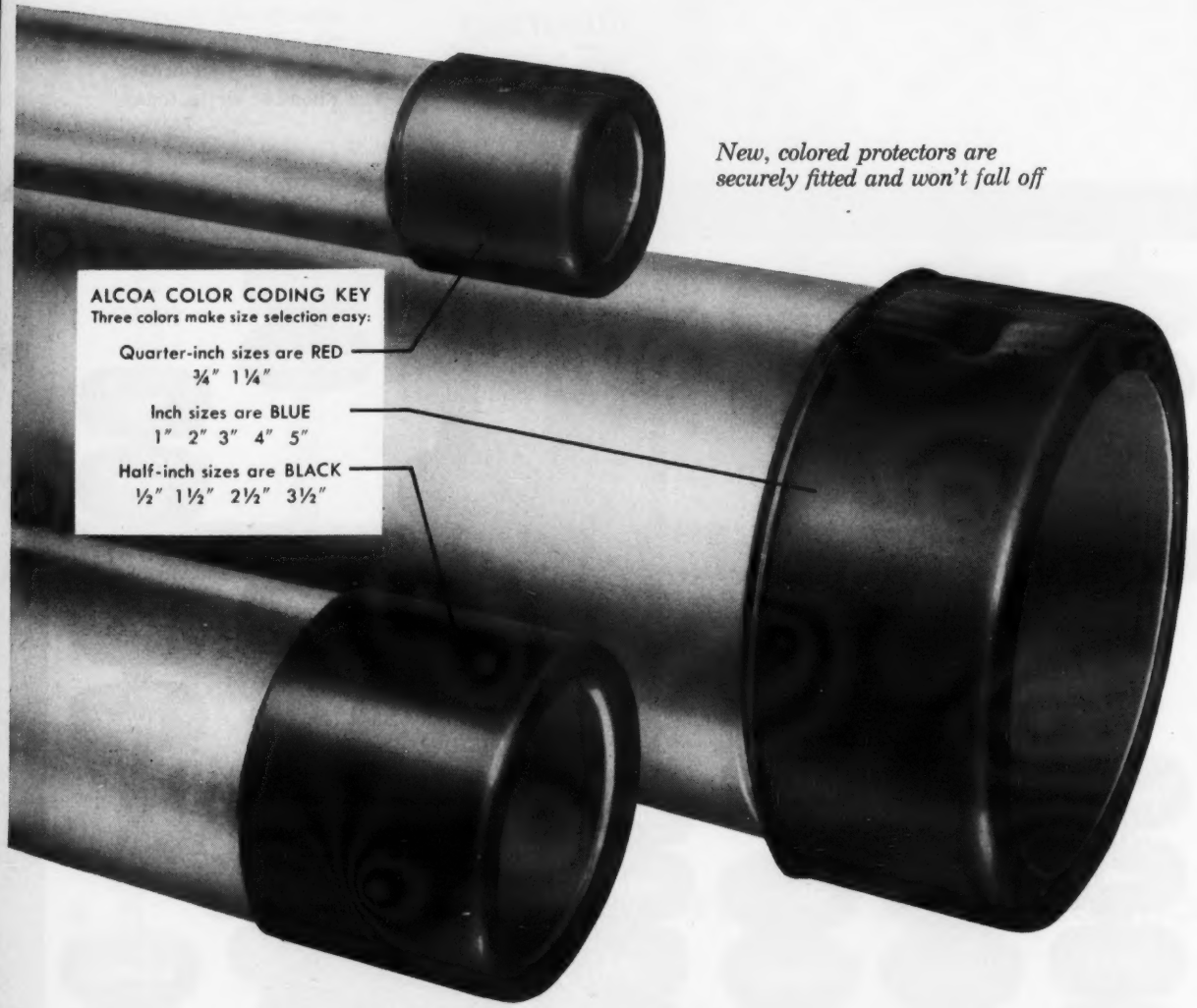
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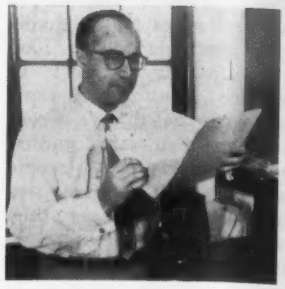
over the editor's shoulder



Recession rainbow?

If every cloud has a silver lining, each recession may have its rainbow.

In good times, we produce as much as possible and stress quick turnover. We're either too busy or too well satisfied to make more than minor changes on an established item.

In poorer times, token changes aren't enough to convince reluctant purchasers. Moreover, for once there is *time* to reflect and re-evaluate. The situation is ripe for creativeness, and the profit-and-loss statement is the spur.

This thinking was stimulated by a remark overheard at the Package Machinery and Materials Exposition. One exhibitor stated that more significant equipment changes and introductions of new equipment had occurred during the past few "recession" months than during the previous two or three years.

He predicted that another full-scale depression would bring about development of some remarkable ideas, now filed away and languishing for lack of time and funds to bring them to maturity. Their impact, he felt, would make recent packaging progress seem like stagnation.

In the meantime, some well engineered equipment, containers, wrapping materials and other packaging paraphernalia are recommended to your attention. They'll be found in our Spotlight on Packaging section, beginning on page 40.

Jack Lenen

ASSOCIATE EDITOR

FOOD PROCESSING
MAY 1958
VOL. 19 NO. 5

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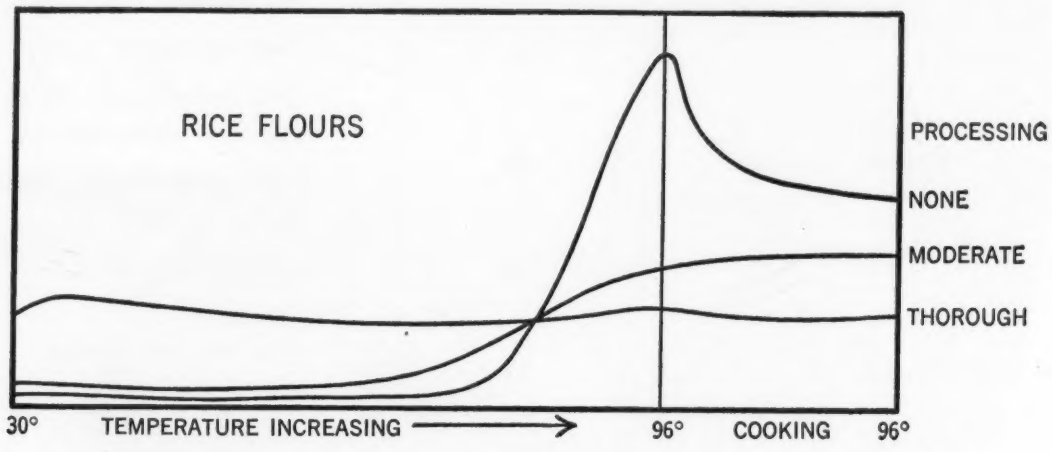

EXAMPLE: The above amylograms illustrate the effect of varying degrees of thermal treatment upon the cooking characteristics of rice flour. Raw rice flour thickens rapidly but is followed by appreciable "Set-back" upon extended cooking. Thoroughly processed rice flour hydrates well in cold water and maintains its viscosity throughout the heating and cooking cycle. Quaker can supply rice flours with any degree of processing within these limits.

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Chicago 54, Illinois

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Published in Chicago
Food Capital of the World

May 1958 Vol. 19 No. 5

Published monthly by

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Printed in the United States

FOOD PROCESSING

(FOOD PROCESSING PREVIEW)

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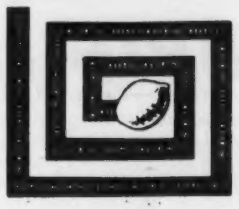

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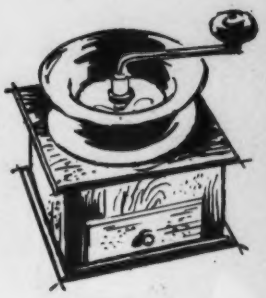

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letters from readers

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Agriculture — Research Frontier

FOOD PROCESSING for March featured an article on the new "pioneering approach" to research of the US Dept. of Agriculture. Author was Dr. Byron T. Shaw, Agricultural Research Service administrator.

While this article was in preparation, the short editorial reproduced below appeared on the front page of the *Chicago Daily News* for February 6, 1958:

How to Help Cut Ike's Budget

From Our Washington Bureau

WASHINGTON — The cost of agricultural research mounts each year in the federal budget.

In fiscal year 1957 the research service of the Department of Agriculture cost the taxpayers $93,799,555.

In 1958 this figure went up to $104,702,890. And in fiscal 1959, the department wants to spend $120,202,890.

Also, in fiscal year 1959, the Commodity Credit Corporation expects to lose $1,192,783,556. That's billion! It does this by purchasing surplus farm products at high prices, and disposing of them at low prices.

This is a time-honored method of losing money. Your government servants yield to no one in their respect for this system.

Might want to ask your congressman how he justifies this system.

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Write for Bulletin 131

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Comments, inspired by this editorial, were received from Dr. Shaw and from Prof. A. G. Norman of the University of Michigan's Department of Botany. Excerpts are reproduced in their essentials below.

No time to cut research

Ann Arbor, Mich. — Establishment of pioneering laboratories in the Agricultural Research Service, as reported in your March issue, is overdue. Too high a proportion of funds devoted to agricultural research has gone into short-range problem solving or trouble shooting. We have so frequently worked backwards from recognition of a problem to a modification of a technology to avoid it.

Although this has accounted for much of the rapid increase in productivity in recent years, it does not give a solid foundation for progress. The Department of Agriculture estimated that out of every $6 spent in research, only $1 goes into basic studies on plants, animals, and soils. The breakdown of expenditures in the State Experiment Stations is probably weighted even more towards end item studies.

With respect to appropriations for the Agricultural Research Service, the 1957-58 budget figures do not represent any very substantial increases. The programs have suffered from the inflationary squeeze, and the increase probably does little more than take care of the lag in this respect.

I am sure you also realize that not all the money is spent for agricultural research. The processing and marketing research expenditures, in my opinion, are directed more towards the interests of the distributor and the consumer than towards the producer. We must have this kind of work, but it might well be done under a different name.

It is certainly my opinion that this is not the time to reduce research expenditures. The surpluses which plague are artificially induced. Though their cumulative effects are very troublesome, they are actually not very large. I am inclined to think that we have solved the easier problems, and that we cannot expect acre productivity to rise at the same rate unless we tackle much more aggressively the basic biological problems involved in plant and animal production.

We must note that our population is rising at an astonishing rate, and that total crop land available is not likely to be increased. Indeed, we are destroying millions of acres by the urban sprawl of our cities and the con-

(*Continued on next page*)

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LOCATION	H. P.	Estimated Annual Savings	Percent Return On Investment
Rouses Point	125	$ 8,350.00	33.2
Whitehall	200	6,841.00	22.3
Mechanicville	80	4,208.00	19.7
Binghamton	125	10,500.00	44.2
ESTIMATED TOTAL ANNUAL SAVINGS		$29,899.00	

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letters

(*Continued from preceding page*)

struction of our national highways.

Finally, there is simply no connection between the very large expenditures for the stabilization of farm prices and farm income and expenditures for research and other agricultural services. I do not feel that the large sums being spent ineffectively in an attempt to control prices are productive expenditures. At times, the effects are self-defeating by penalizing efficiency.

PROF. A. G. NORMAN
Director, Botanical Gardens
Department of Botany
University of Michigan

Increase report misleading

Washington, D. C. — Increases shown by the figures [in the "Chicago Daily News" editorial] are misleading. For fiscal 1958, an increase of $10,903,335 is indicated, but of this only $2,183,890 was for program work. The balance is due to transferring to this appropriation work and costs previously financed from other appropriations, and to other adjustments.

For fiscal 1959, there is an apparent increase proposed of $15,500,000. However, in fiscal 1958, $18,000,000 has been authorized to be advanced from Commodity Credit Corporation funds for conduct of the brucellosis eradication program, and this amount will not be available in fiscal 1959. On a comparable basis, therefore, there is actually a net decrease of $2,500,000 in funds proposed for financing Agricultural Research Service programs in fiscal 1959.

The amounts reported reflect the total adjusted appropriation for operation of the Agricultural Research Service . . . for fiscal 1959. The amounts include funds for our plant and animal disease and pest control and eradication programs, and for meat inspection, as well as for research activities. For example, the 1959 Budget Estimates are distributed as follows:

Research	$ 60,744,890
Plant and animal disease and pest control	42,132,000
Meat inspection	17,326,000
	$120,202,890

We have no apologies to make for the Federal government's expenditures for agricultural research. They are small as compared with the savings. In 1956, farm output was 36 per cent larger than in 1940. But total resources — land, labor, fertilizer, machinery, etc. — rose only about 9 per cent. Consequently, over-all

efficiency increased during this period by 25 per cent. Without such gain, a fourth more resources would have been needed to produce the 1956 volume of farm output. Thus in 1956 alone the resources saved by increase in efficiency since 1940 amounted to about $7.5 billion.

DR. BYRON T. SHAW
Administrator
Agricultural Research Service
US Department of Agriculture

Radiation Appraisal Letters

Schenectady, N. Y. — General Electric is interested in the radiation treatment of foodstuffs through its interest in making radiation producing equipment. Partly as a result of this, the General Electric Research Laboratory has a small biology research group, and is working on basic problems of chemical changes in irradiated meat in collaboration with the Quartermaster Corps.

I belong to a small group of "assessment" research staff. In the past year, I have completed a study of the economic and technical aspects of the use of radioactive isotopes and accelerators in the chemical and food industries — for, of course, even if technically feasible, these processes may not ever promise to be economic — and even if technically and economically feasible with accelerators they may not promise to be with radioactive by-products.

In the course of this study, I became aware of the letters in your October 1957 issue — on Radiation Preservation. I would very much like to see the two previous installments and any subsequent articles on this.

L. G. COOK
Project Analysis Section
Research Application Dept.
Research Laboratory
General Electric Company

● The letters to which Mr. Cook refers appeared as part of a continuing series of radiation preservation appraisals by research experts of leading food companies. The July, August, and October issues of FOOD PROCESSING contained a total of 17 such letters. Many of them acknowledged specific radiation problems, and all revealed a realistic attitude toward immediate prospects. Reader response to this series has been gratifying.

—EDITOR

In every day's production—

your processed meats have extra flavor

with Clinton Products

FOR all your meats, you can improve flavor, color and tenderness with Clinton products in your curing solutions. And, you can be sure that Clinton corn syrup (dry or liquid) and *Clintose*® dextrose will produce these results every time, because:

CONSISTENT FORMULATION MAKES CLINTON PRODUCTS RELIABLE

Three analytical control laboratories and several single-purpose testing stations are located at strategic points in our plant. They check every stage in the processing of *all* products . . . they check *all* finished products to be sure specifications are met exactly. That's why you can depend on Clinton products to do the job for which they are needed.

Your Clinton salesman can help you select the right products to cure your meats as you want them. And, should you need special production advice, *prompt* technical service is available when you need it. Call your Clinton salesman today, or write:

CLINTON CORN PROCESSING COMPANY
CLINTON, IOWA

CLINTON

. . . Where research today improves tomorrow's product

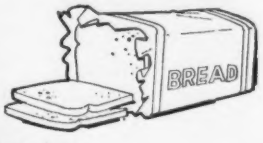
6699 on Reader Service Slip

TAKAMINE ENZYMES

WORK FOR YOU ECONOMICALLY!

If your business is processing foods containing starches, proteins, pectins or glucose, chances are that you can produce a superior product more economically by using these specific TAKAMINE catalysts:

PROTEINASES



For the modification and hydrolysis of proteins in food and pharmaceutical manufacturing.

GLUCOSE-OXIDASE

Prevent browning due to glucose or oxygen or container corrosion, assuring longer shelf-life!

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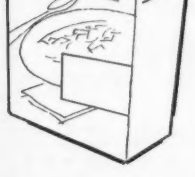
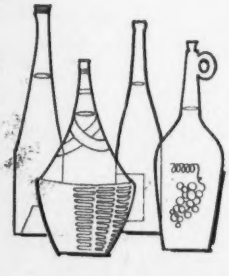
For liquifaction and hydrolysis of starch to produce soluble dextrins and sugars, or to remove starch causing filtration problems.





PECTIC ENZYMES

For the hydrolysis of pectins in fruit and fruit juices to speed processing and to make fruit juices sparkling clear.

SODIUM ISOASCORBATE AND ISOASCORBIC ACID

are available in bulk or handy tablet form for protection of frozen fruits, vegetables, beer, carbonated beverages, meats and fish.

FOODS *Look* better . . . *Taste* better . . . *Sell* better with TAKAMINE products.

Write TAKAMINE Research Center for complete information on the use of enzymes in your particular operation:

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DIVISION OF MILES LABORATORIES, INC.
CLIFTON, NEW JERSEY

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conventions and exhibits

May 12-14. Biscuit & Cracker Mfrs. Assn. and Biscuit Bakers Institute, Inc., joint meeting, Edgewater Beach Hotel, Chicago, Ill.

May 25-29. Institute of Food Technologists, annual meeting and exposition, Palmer House, Chicago, Ill.

May 20-22. 3-A Sanitary Standards Committees, Hotel Pick-Melbourne, St. Louis, Mo.

May 26-29. AMA Packaging Exposition, Coliseum, New York City.

June 2-7. Annual Industrial Microbiological Institute, Purdue University, Lafayette, Indiana.

June 8-12. First Inter-American Food Congress, Americana Hotel, Bal Harbour, Florida.

June 9-12. National Materials Handling Exposition and Conference, Auditorium, Cleveland, Ohio.

June 9-13. Fourth International Automation Exposition and Congress, Coliseum, New York City.

June 12-13. First Canadian Institute of Food Technologists Conference, Queen Elizabeth Hotel, Montreal, Canada.

June 23-25. American Society of Agricultural Engineers, annual meeting, University of California, Santa Barbara, Calif.

June 23-25. American Society of Refrigeration Engineers and American Society of Heating and Air Conditioning Engineers, joint meeting, Hotel Leamington, Minneapolis, Minn.

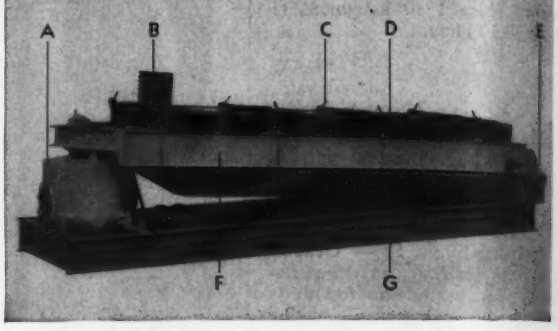
July 6-10. National Confectioners Assn., annual conference and exposition, Sheraton-Palace Hotel, San Francisco, Calif.

Aug. 11-15. Gordon Research Conferences on Food and Nutrition, Colby Junior College, New London, N.H.

Aug. 24-28. American Institute of Biological Sciences, American Phytopathological Society, American Society, for Horticultural Sciences, annual meeting, University of Indiana, Bloomington, Indiana.

ROTEX SCREENERS

GIVE PROFITABLE PRODUCTION!



A Quiet Running Counter-Balanced Drive
B Flexible Rubber Inlet and Outlet Sleeves
C Quick Release Cover Clamps
D Rubber, Dust-Tight Inspection Ports
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F All Metal Screen Box
G Heavy Welded Structural Steel Base

For over 40 years ROTEX Screeners have been widely used throughout industry. Today there are installations in the United States and over 25 foreign countries. Built for dependable service, ROTEX are long known for accuracy, capacity and operating economy.

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Write for Bulletin 401 and information on your screening requirements. Our engineering staff will be pleased to cooperate with you.

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6701 on Reader Service Slip

food regulations

FDA isolates feed contaminant as poultry plague cause

Find tarry substance in fat ingredients used; search for other toxic fatty by-products

Several million members of the poultry population have been struck down in a six-month period by a mysterious and fatal disease. FDA's come up with the probable cause — a certain fatty ingredient in the poultry feed.

When six different feed companies reported trouble with their products, the fat ingredients in the feeds were suspected. Investigation revealed that all the companies involved were buying fat from the same firm. Tracing it further, this firm was found to be buying a tarry residue as a fat-processing by-product from one particular company.

Then, an experimental feeding of the compounded fatty material and the tarry by-product produced in test flocks symptoms similar to those reported in farm plagues. FDA's latest move aims at determining whether the feed additive may result in the accumulation of toxic material in poultry fat. Meanwhile, distribution of the toxic ingredient has been discontinued.

What FDA will be looking for now are any similar fatty-by-products that may cause poultry disease.

Interesting sidelight on animal fats is that they were used in feeds for the first time only a few years ago. With the increased use of synthetic detergents a surplus of animal fats resulted. Incorporation of animal fats in feeds has presented one way of disposing of these fats.

It appears that abuses occurred as cheap toxic "fillers" found their way into the marketplace. Industry is making no comment until more conclusive experimental data becomes available.

FDA Commissioner George P. Larrick said the poultry losses that occurred could have been avoided had the tarry residue been tested adequately *before* it was used as an ingredient of feed.

Standards for artificially sweetened preserves

After extensive research, National Preservers Association has petitioned FDA to establish identity standards for "artificially sweetened jellies, jams and preserves." As consumer demand for low-calorie foods increases and as the products multiply, need for standards becomes essential.

To get its point across, NPA combed the market for all dietetic jams and jellies, and then had contents and labels analyzed. Results showed a "complete lack of uniformity in composition and labeling."

Their proposed standard calls for a 55 per cent fruit content, with the balance in bodying agents. Products made with sugar, NPA points out, have a reverse ratio of 45 to 55. With regard to the label, it was emphasized that "artificially sweetened" is acceptable but "imitation" is not.

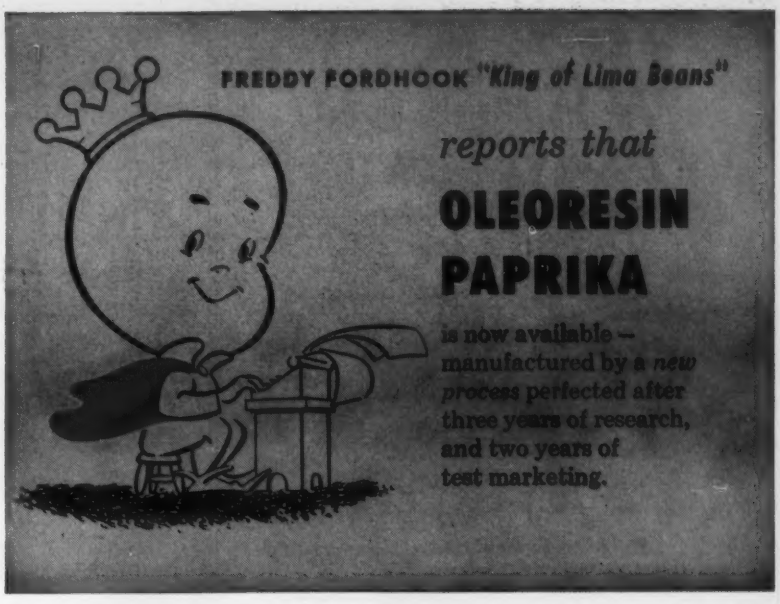
Opposition to NPA's proposal appears unlikely.

FDA publishes ice cream standards

Tentative identity standards for ice cream have been announced by FDA. Objections may be filed until June 24 on any of the provisions in the standard.

Five frozen products are covered: plain ice cream; egg-

(*Continued on next page*)


FREDDY FORDHOOK "King of Lima Beans"
reports that
OLEORESIN
PAPRIKA
is now available — manufactured by a new process perfected after three years of research, and two years of test marketing.

✔ THE NEW PROCESS EMPLOYS THE

1. Direct extraction of fresh California paprika peppers,
2. Grown in our own fields, on the Oxnard Plain,
3. Harvested at the peak of perfection for high color.
4. In a new, modern plant using low temperatures and high vacuum.

✔ THE NEW PROCESS OFFERS

1. A standardized color of,
2. Proven stability, which is
3. Free from sediment.
4. A natural food color.
5. 40,000 color units for the normal trade.
6. 80,000 units or higher for buyers who require unusually high color content.

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WHITTEN
DAIRY GELATIN
Reduces Shrinkage In Ice Cream

HYPOWR CONSOMME GELATIN
Best For Canned Jellied Soups

Our XXTRA-FINE SOLUBILIZED GELATIN is excellent for clarifying wine and fruit juices. No heat necessary.

J. O. WHITTEN CO., INC.
Winchester, Massachusetts
"GELATIN MANUFACTURERS SINCE 1903"

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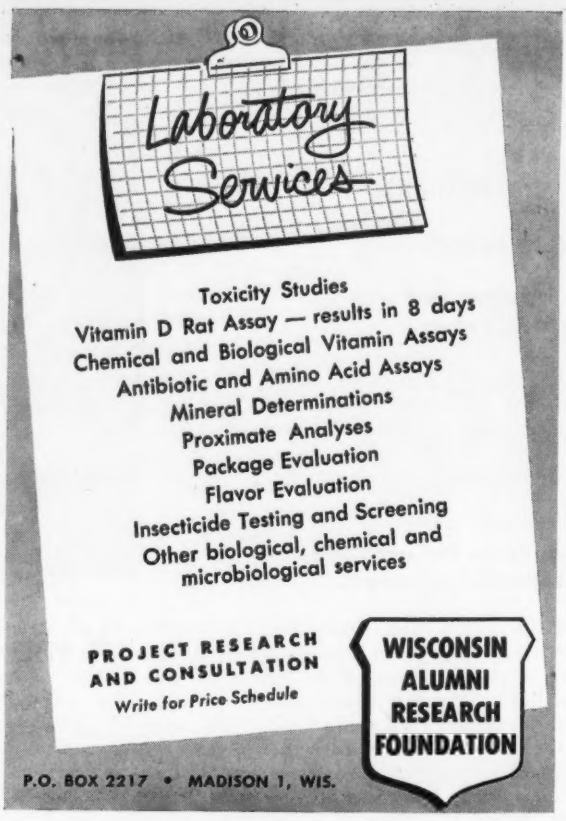
Laboratory Services
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Vitamin D Rat Assay — results in 8 days
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BETTER JAMS
Jellies and Confections Because...

1. *Wide pH Range*
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4. *Makes jams & jellies with an even, smooth texture (never grainy) and improved spreadability*

For full information, technical advice, and formulas write Dept. FP-5.

Plants in Apple Regions From Coast to Coast Assure Dependable Supply
SPEAS COMPANY, GENERAL OFFICES, KANSAS CITY 20, MISSOURI

6705 on Reader Service Slip

food regulations

(*Continued from preceding*

containing ice cream either frozen custard, ice cream, or French ice cream; ice milk, wh been sold as soft ice fruit sherbets; and wa

Products labeled cream" must have a m of 10 per cent milk f total milk solids (milk nonfat milk) of not le 20 per cent.

"Ice milk" must co to 7 per cent milk fat less than 11 per cent milk solids.

Fruit sherbets mus tain from 1 to 2 per ce fat, with a total milk content of not more per cent.

To prevent excessive tion of ice cream, the ards would require weigh not less tha pounds per gallon. T vent use of excess wat standards would req solids content of not le 1.6 pounds per gallon.

Stabilizers permitte

The standard would the use of certain stab but would restrict the any one or a combina not more than ½ of o cent of the weight of t ished ice cream.

Stabilizers that wou permitted include: gelat gin (sodium alginate); carboxymethylcellulose; tract of Irish moss; ps seed husk; agar-agar gums including gum gum karaya, locust bea gum tragacanth, oat gu guar seed gum.

Ban "polys"

A number of sy emulsifiers (various m ters) that have been em in ice cream would r permitted. One class of sifiers — the mono- a glycerides of fat-formin

(*Continued on pa*

For more information on pro uct at right, circle 6706 . see information request bla opposite last page.

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French custard
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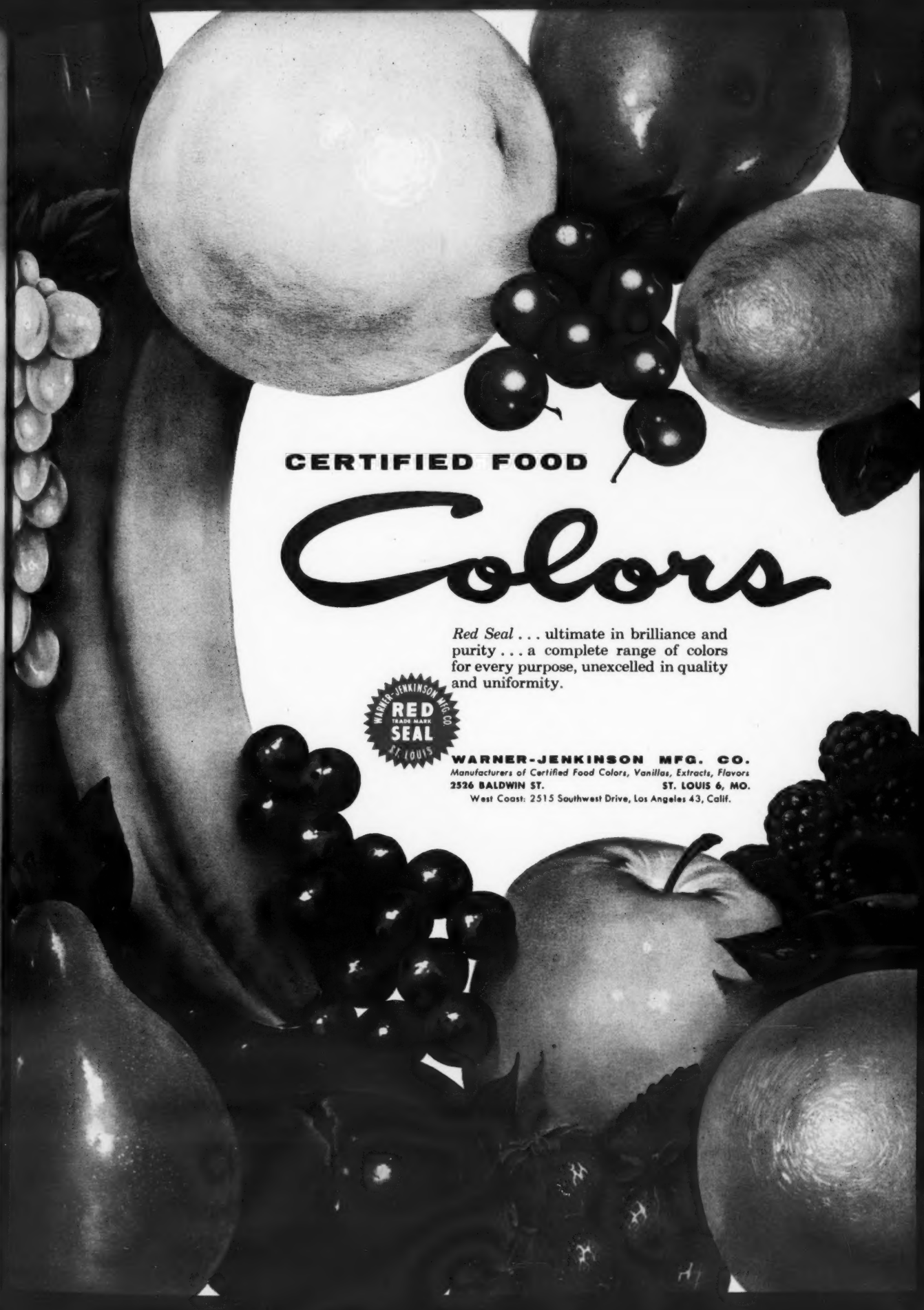
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Red Seal . . . ultimate in brilliance and purity . . . a complete range of colors for every purpose, unexcelled in quality and uniformity.
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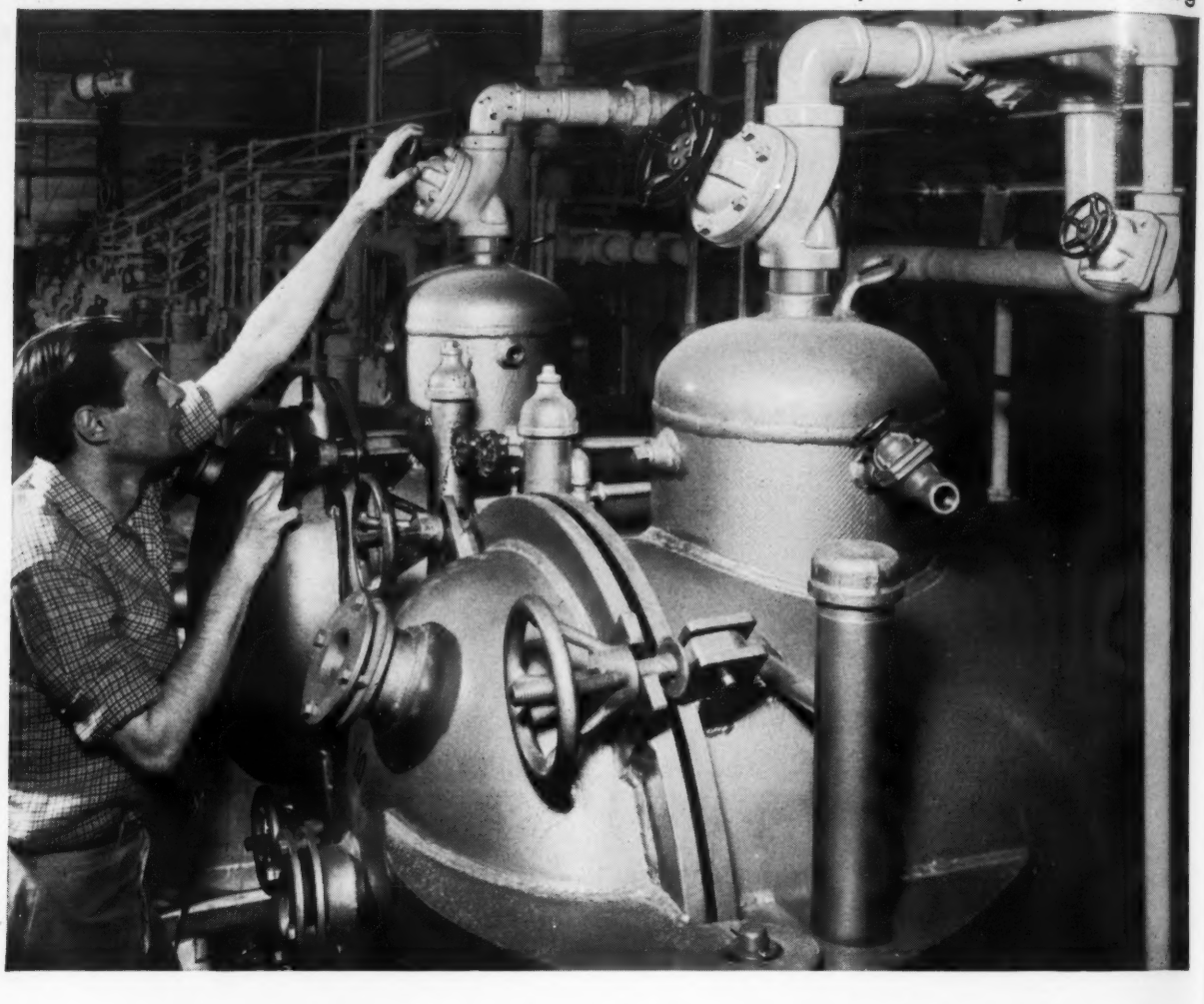
Manufacturers of Certified Food Colors, Vanillas, Extracts, Flavors
2526 BALDWIN ST. ST. LOUIS 6, MO.
West Coast: 2515 Southwest Drive, Los Angeles 43, Calif.

Packless valves assure Electron Products perfect processing



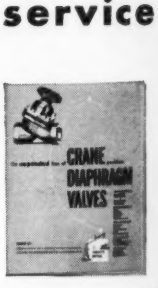
Crane diaphragm valves still hold tight after 18 months on 100-micron vacuum service

Electron Products Inc., Pasadena, Calif., forms special electronic parts of metalized paper. Processing—drying, deaerating, impregnating—is done under constant vacuum.

Valves, to hold the critical vacuum within a maximum leak rate of 100 microns for a 24-hour period during processing, had to be selected with care. Obviously not any valve would do. The choice—Crane diaphragm valves for high performance value.

After 18 months, these Crane packless valves continue to hold tight on this critical vacuum service for as long as 36 hours—and on occasion, over an entire weekend.

Crane packless diaphragm valves are widely used also in processing industries where absolute tightness is necessary to prevent leakage of volatile, corrosive and hard-to-hold fluids. Complete information is available from your Crane Representative. Or write for 24-page circular.



All about Crane diaphragm valves—patterns, body and trim materials, linings, 180 tested service suggestions, etc.—in Circular AD-1942. Send for it today.

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PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill.—Branches and Wholesalers Serving All Areas

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pointed **G. R. D**
newly created
president of gr
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G. Detlefsen

Dr. Bernard
succeeded **Dr. P**
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of Food and D
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Ave. at 58th
(Queens).

A $2 million c
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Products Refinir
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Walter Kidde
Inc.

Dr. Ben F. Buc
associate directo
development of
Foods Research
Tarrytown, N.Y.

B. F. Buchanan

Armour and
pointed **J. R.**
manager of all pr
products — inclu
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and canned pro
Thomas was elect
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the company's M

bury Mills, Inc. has ap- **G. R. Detlefsen** to the created position of vice ent of growth and ex- n. Formerly chairman firm's research and de- ent committee, Detlef- ll now integrate all re- activity, business de- ent, new product de- ent, and other efforts ed to produce growth pansion.

etlefsen

B. L. Oser

Bernard L. Oser has ded **Dr. Philip B. Hawk,** founder, as president d and Drug Research tories, New York City. recently moved to ex- quarters at Maurice at 58th St., Maspeth s).

million corn processing s being built for **Corn ts Refining Co.** in in- l Cali, Colombia, by Kidde Constructors,

Ben F. Buchanan is new te director for product oment of the General Research Center at wn, N.Y.

Buchanan

J. R. Herd

our and Co. has ap- **J. R. Herd** general r of all processed meat s — including smoked cooked meats, sausage, nned provisions. **Jack** was elected vice pres- nd general manager of mpany's Midwest Area.

So much for so little...

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Vanillin ... of the very highest quality, Shulton Vanillin, U.S.P., is controlled throughout its manufacture to rigid flavor standards, and is highly recommended for foods and beverages of superior quality.

Vanitrope* ... a proven economy standard, 25 times stronger than vanillin, yet saving you up to 50% in flavor costs, is ideal for enhancing flavor, its rich, sweet aroma being remarkably like that of the freshly-cut, cured vanilla bean.

Vanillin & Vanitrope* ... the finest vanilla-type flavor ingredients you can buy, work well together, or alone, and can easily be incorporated into your formulas.

Technical data, samples, and additional information, on request.

*T. M. REG. BRAND OF PROPENYL GUAETHOL.

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FINE CHEMICALS

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SHULTON, INC.
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NEW YORK

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Steelcote

PRODUCTS

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Steelcote Products Are Engineered to Your Problems

Write or Wire for Survey of Your Plant

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Is the Answer Where Chemicals, Excessive Weight and Abrasion Destroy Floors

Eight times stronger than concrete; resists more than 45 chemicals; in emergencies can be trucked over in 1 hour.

The Foremost Corrosion Resistant Air Dry Coating

Protects surfaces where chemical corrosion eats up other type paints or coatings. Dries to 75% hardness of glass yet remains flexible to withstand chipping or cracking.

Transforms wet rotting walls to sanitary porcelain-like beauty. This bactericide, fungicide system of wet wall beautification is the pioneer and leader in its field; your assurance of greater economy, and dependability.

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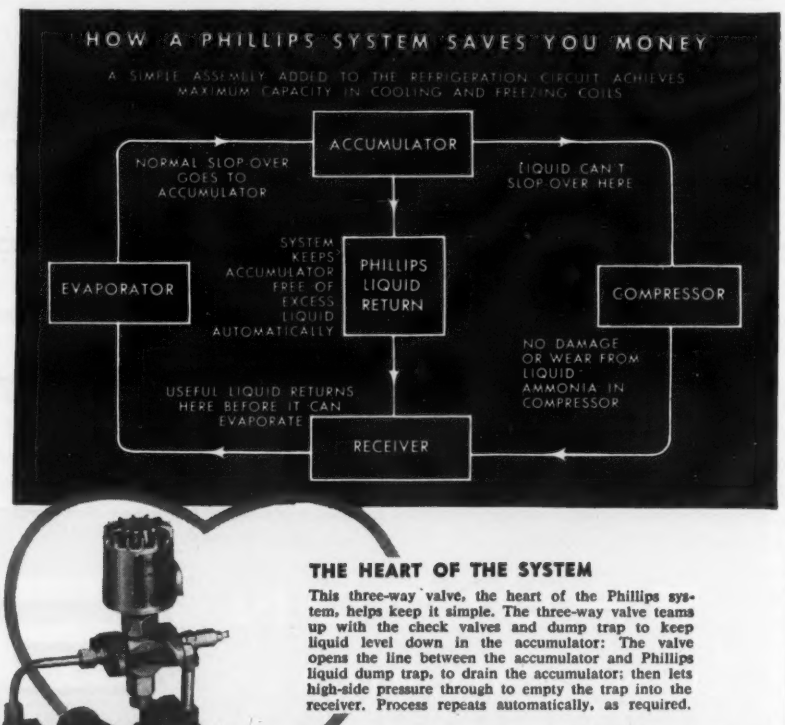
"SLOP-OVER" is not a necessary evil

A PHILLIPS Liquid Ammonia Return System Will Protect Your Refrigeration Plant Automatically by Putting Slop-Over Where It Belongs — In the Receiver

A PHILLIPS Liquid Ammonia Return System gets liquid "slop-over" out of the accumulator in a refrigeration system almost as fast as the liquid arrives. The Phillips system sends the liquid back to the receiver quickly and automatically. Plant efficiency is increased, compressors are protected from wear and damage; operator time is saved; maintenance is decreased.

The Phillips system provides an extra dividend by speeding defrosting—it permits liquid to be drained quickly from coils to other parts of the system, to be just as quickly returned after defrosting.

Several types of systems are available, for gravity, injection-lift and pressure-lift operation in sizes up to 1,000 tons. Let a Phillips engineer help you select the right system. Send for Bulletin LRS-56.


HOW A PHILLIPS SYSTEM SAVES YOU MONEY
A SIMPLE ASSEMBLY ADDED TO THE REFRIGERATION CIRCUIT ACHIEVES MAXIMUM CAPACITY IN COOLING AND FREEZING COILS
ACCUMULATOR
NORMAL SLOP-OVER GOES TO ACCUMULATOR
LIQUID CAN'T SLOP OVER HERE
EVAPORATOR
SYSTEM KEEPS ACCUMULATOR FREE OF EXCESS LIQUID AUTOMATICALLY
PHILLIPS LIQUID RETURN
COMPRESSOR
NO DAMAGE OR WEAR FROM LIQUID AMMONIA IN COMPRESSOR
USEFUL LIQUID RETURNS HERE BEFORE IT CAN EVAPORATE
RECEIVER

THE HEART OF THE SYSTEM

This three-way valve, the heart of the Phillips system, helps keep it simple. The three-way valve teams up with the check valves and dump trap to keep liquid level down in the accumulator: The valve opens the line between the accumulator and Phillips liquid dump trap, to drain the accumulator; then lets high-side pressure through to empty the trap into the receiver. Process repeats automatically, as required.

PHILLIPS FLOAT CONTROLS

H. A. PHILLIPS & CO.
DESIGNERS AND ENGINEERS
REFRIGERATION CONTROL SYSTEMS
3255 W. Carroll Ave.
Chicago 24, Illinois

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association news

Canada's food industries, their present status and future prospects, is the theme of the **Canadian Institute of Food Technologists** conference. Speakers will represent dairy, oils and fats, fisheries, meat packing, canning, milling and baking, and chocolate and confectionery operations.

Further information from Maj. E.E.S. Wright, Canadian Liaison Officer, QM Food and Container Institute, 1819 W. Pershing Rd., Chicago 9, Ill.

Industrial Microbiological Institute at Purdue University will consist of morning laboratory, and afternoon and evening symposia sessions. Topics to be discussed include: antibiotics to control plant diseases, radioactive tracers to study fungicidal action, industrial importance of fungi, and host-parasite relationships.

Every one of the 21 Latin American countries will have food scientists at the coming **Inter-American Food Congress.** Besides exhibits, an extensive speaking program is arranged. List of papers to be presented available from J. Arthur Lewis, 1008 Metropolitan Bank Bldg., Miami, Fla.

Packaging Exposition will have nearly 400 firms exhibiting in the New York Coliseum. Accompanying Conference will meet at the Hotel Statler.

Conference program available from Packaging Div., American Management Assn., 1515 Broadway, Times Square, New York 36, N.Y.

Lipotropic Foundation has received a $5,000 grant-in-aid from the **A. E. Staley Mfg. Co.** The Foundation sponsors metabolic and nutritional research.

Conventions and Exhibits Schedule is on page 12

Conference to be held concurrently with the **National Materials Handling Exposition** is in charge of the American Society of Mechanical Engineers. Sessions will be devoted to design of new handling systems, end-loading practices, and warehousing.

At the Exposition will be more than 100 basic types of mechanical handling equipment.

Fats, radiation, aerosols to highlight IFT meet

Chicago to host technologists' annual conference, exposition

Arrangements for presenting 208 papers at the annual Institute of Food Technologists meeting are completed, according to Dr. H. E. Robinson of Swift & Co., general chairman of the conference and exposition. The event will be held in Chicago's Palmer House from May 25 to 29.

Dr. Robinson

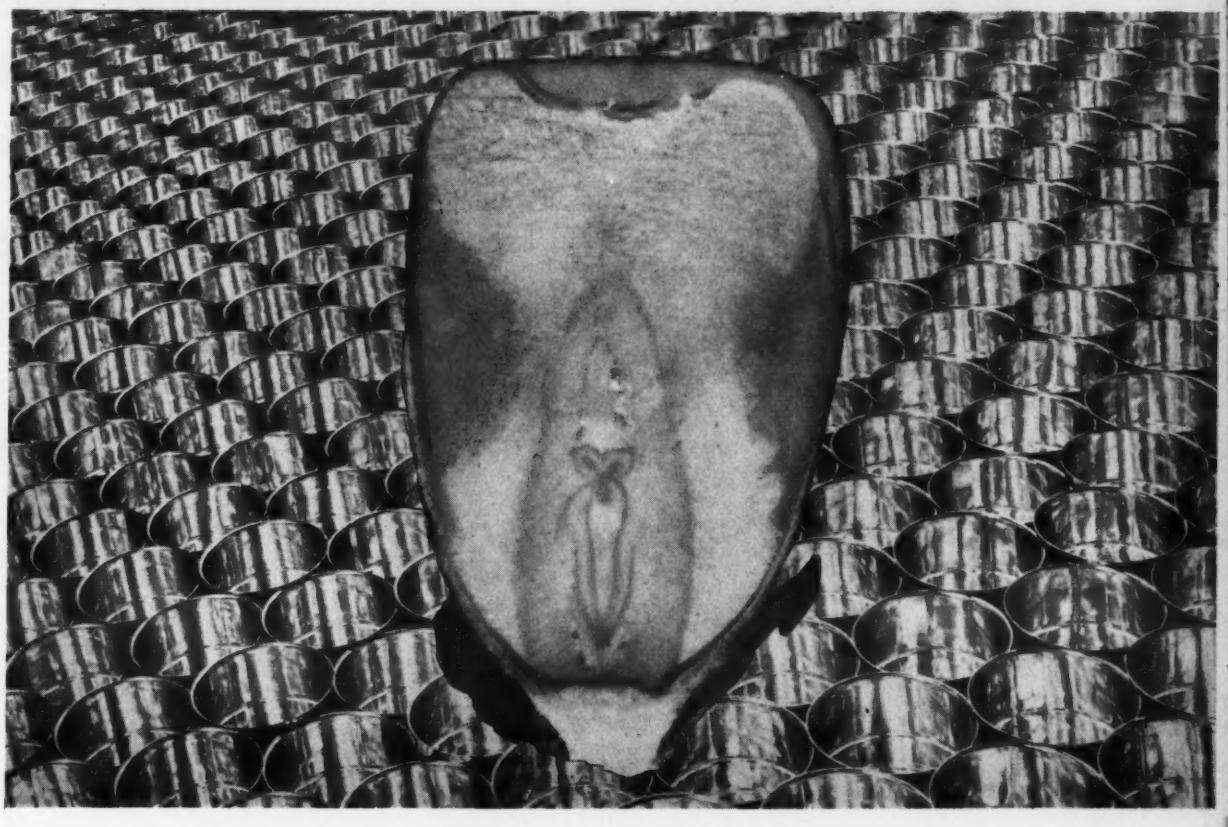
Operations research and present situation in food fats are subjects for two special symposiums. At the 24 technical sessions, topics to be presented include radiation preservation, pressure packaging (aerosol), space feeding, citrus and meat processing, and use of X-rays and colorimetric instruments.

Abstracts of papers will be available from Marian Gilchrist, Institute of Food Technologists, 176 W. Adams St., Chicago 3, Illinois.

Other attractions include the exposition with 74 exhibitors; field trips to six plants of Chicagoland's food processors, supply firms, and research laboratories.

An entertainment highlight will be in the famous International Amphitheatre. All technologists and their families will partake of a chuckwagon dinner. Singing will be supervised by members of the WLS Barn Dance troupe.

SPECIAL STARCHES



for Special Effects in Canned Foods

Special Starches from National simply stabilize or thicken. Nothing else! As stabilizers they never cloud color, never mask flavor. As thickeners they maintain viscosity characteristics even after extended storage. The result is these six special effects:

- Full Natural Color
- Full Flavor
- Smooth Creamy Flow
- Uniform Viscosity
- Shelf Life Stability
- Breakdown Resistance

These unusual starches are refined from corn, amioca or tapioca. They improve canned foods that range from soup to dessert. We'd like to show you how. Just write, including a description of your product or problem.

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No matter where you are . . .

With Morton, you need only one salt supplier

There's no need to complicate your bookkeeping, risk shipping delays and quality differences just for the sake of having two salt suppliers. There's really no "safety factor" in it, either. For plant managers and purchasing agents in every field of industry are finding that it pays to buy all their salt from one supplier—Morton. It not only assures you salt of uniform quality, but Morton, the only nation-wide salt company, offers you many advantages you just can't get elsewhere.

Service in 48 states. Only Morton has 9 salt plants, warehouses and sales offices from coast to coast. This means Morton can offer you complete salt service whether you have just one plant or several plants in different states.

Any kind of salt you need. Morton produces, refines and delivers nearly 100 different grades of salt to industry for 14,000 different uses. This means you can get expert, *impartial* advice on which grade or grades will do the best job for you.

Dependable delivery. Because Morton has mines, wells, and solar ponds in more than one location, Morton is better equipped to make delivery from alternate plants even under adverse economic or other conditions that might endanger your plant's continuous operation.

Complete technical assistance. Morton backs its salesmen with the services of its salt research laboratory, the most complete laboratory of its kind in the world. While your Morton salesman can help you solve many of your salt problems—everything from recommending a different grade of salt to helping you plan a water-softening system or put in or modernize a brine installation—he can refer problems he personally can't solve to a Morton field specialist for quick, thorough analysis.

We think you'll find it well worth while to order all your salt from Morton. For complete information, write:

MORTON SALT COMPANY
INDUSTRIAL DIVISION
Dept. FPr-5-58, 110 N. Wacker Drive, Chicago 6, Illinois

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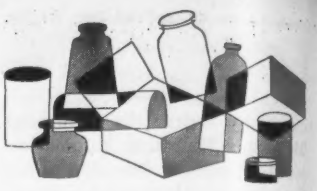
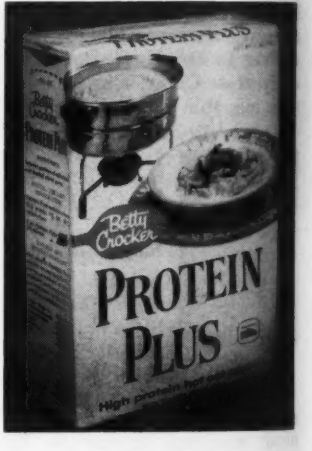


First major high-protein hot cereal . . .

. . . has been introduced to Midwest and West Coast by General Mills, Inc., 9200 Wayzata Blvd., Minneapolis 26, Minn. Containing more high quality protein ounce-for-ounce than raw meat, Protein Plus is a combination of oats and wheat germ. No special ingredients or "additives" were needed. Product is distributed in 18-oz packages, with a convenient metal pour spout on side. Designed by Lippincott and Margulies, Inc., 430 Park Ave., New York 22, N.Y.



New Libby line . . .

. . . of frozen specialty foods includes Tuna and Noodles, and Macaroni and Cheese. The 8-oz entree items are packaged in waxed overwraps that stress quality. Products of Libby, McNeill & Libby, W. Exchange & S. Packers Ave., Chicago, Ill. Overwraps designed and produced by Western-Waxide Div., Crown Zellerbach Corp., San Leandro, Calif.

packaging viewpoint

PACKAGING SECTION

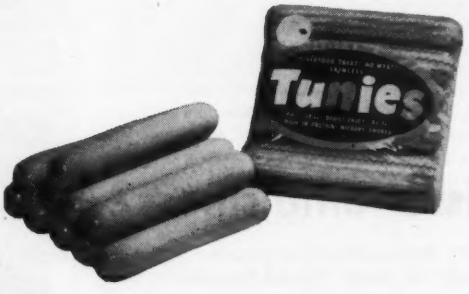
What's new in product and package design . . . a pictorial presentation

Easy-open peel-package spawns trend . . .

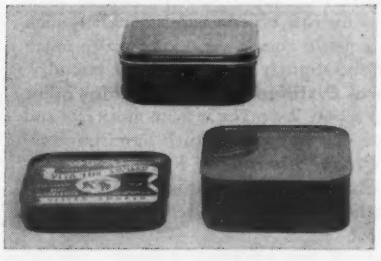
. . . for packaging frozen fish sticks, other frozen, non-liquid items. Gorton's of Gloucester, Inc., Gloucester, Mass., is now in full production with the package . . . expects it to account for another 5 percent rise in their share of the fish-stick market in 1958. Consumer simply lifts tab for start of opening process (left), continues to tear strip completely across package (center). Special process in package makes neat and smooth tearing — the tear is indicated but only partially cut. Top line tear is offset from inside tear by 1/8". After strip is torn completely across top of package folds back for easy access. Opening device used is completely new. Waxed carton eliminates customary overwrap. Special machine to seal end flaps attaches to standard equipment. Tear-strip-opening carton developed and produced by Container Corporation of America, 38 S. Dearborn St., Chicago 3, Ill.

Tuna 'hot dog' . . .

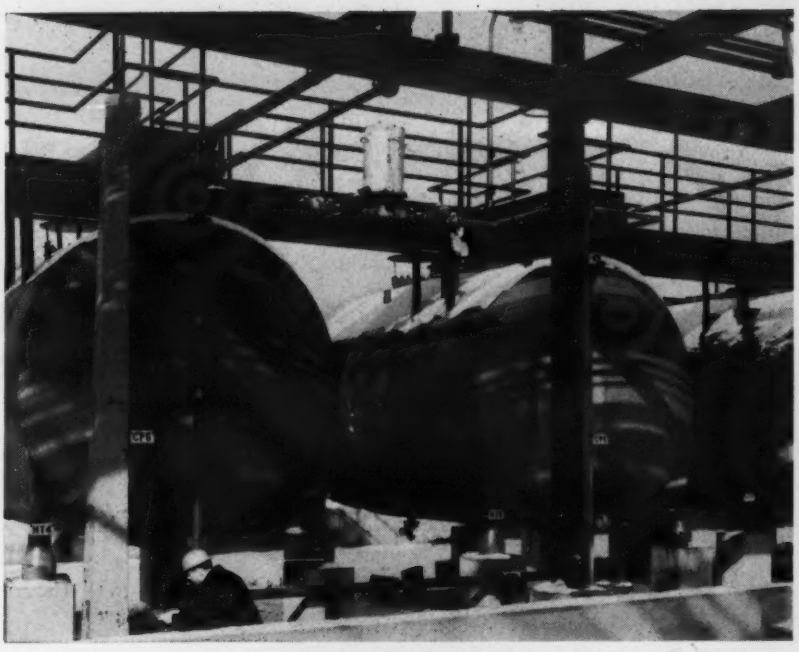
. . . is going over big in West Coast markets. The hickory-smoked, cello-wrapped, skinless fish wiener was conceived after reports that a concessionaire was stuck with 10,000 hot dogs at a Friday ball game. In less than 6 months, production has climbed from 4000 lb/day to over 48,000 lb/day. "Tunies" taste like a top grade meat wiener, and sell in the same price range in supermarkets. National distribution is planned. Development of Tunies, Inc., 636 E St., Chula Vista, Calif.



Aluminum squares off for freezer space . . .



. . . with a seamless package entry, available in several sizes and colors. Extra large surface area plus shallow depth of cans insure quick, thorough freezing. Because of the metal's heat (cold) conductivity, contents are as much as 10° cooler in freezer display case, yet are protected against freezer burn and dehydration. Other advantages include lighter weight and one-third less space requirement than round cans of same capacity; nesting feature which allows high stacking; and large display surface for direct color printing. Vita Food Products, Inc., New York City, is packaging certain smoked fish delicacies in the new containers. Supplier is Reynolds Metals Co., 2500 S. 3rd St., Louisville, Ky.



Glassed-steel tanks are widely used for storing foods, especially where flavor can be affected by the presence of metal.

What flavor are your storage tanks?

Unlike many metals, glassed steel has no flavor.

Look then to Pfaudler glassed-steel tanks when you have an ingredient or food whose flavor you want to protect.

Acidic fruits, liquid sugars, flavorings, treated water, and the like are never contaminated by glassed steel.

Nor do such substances *corrode* glass, so you can expect longer than usual life from our glassed-steel tanks and they are economical.

The expression "smooth as glass" explains why you'll find cleaning much easier, too.

Pfaudler glass is permanently bonded, physically and chemically, to the steel. The glass can never shatter. This material has for many years been a standard in the pharmaceutical industry where sterility and noncontamination of product are paramount.

Pfaudler glassed-steel storage tanks run from 500 to 35,000 gallons in both vertical and horizontal designs. Tank openings are arranged to your requirements.

Check the coupon for more information on these tanks and other integrated food process equipment.

FOOD EQUIPMENT BY PFAUDLER

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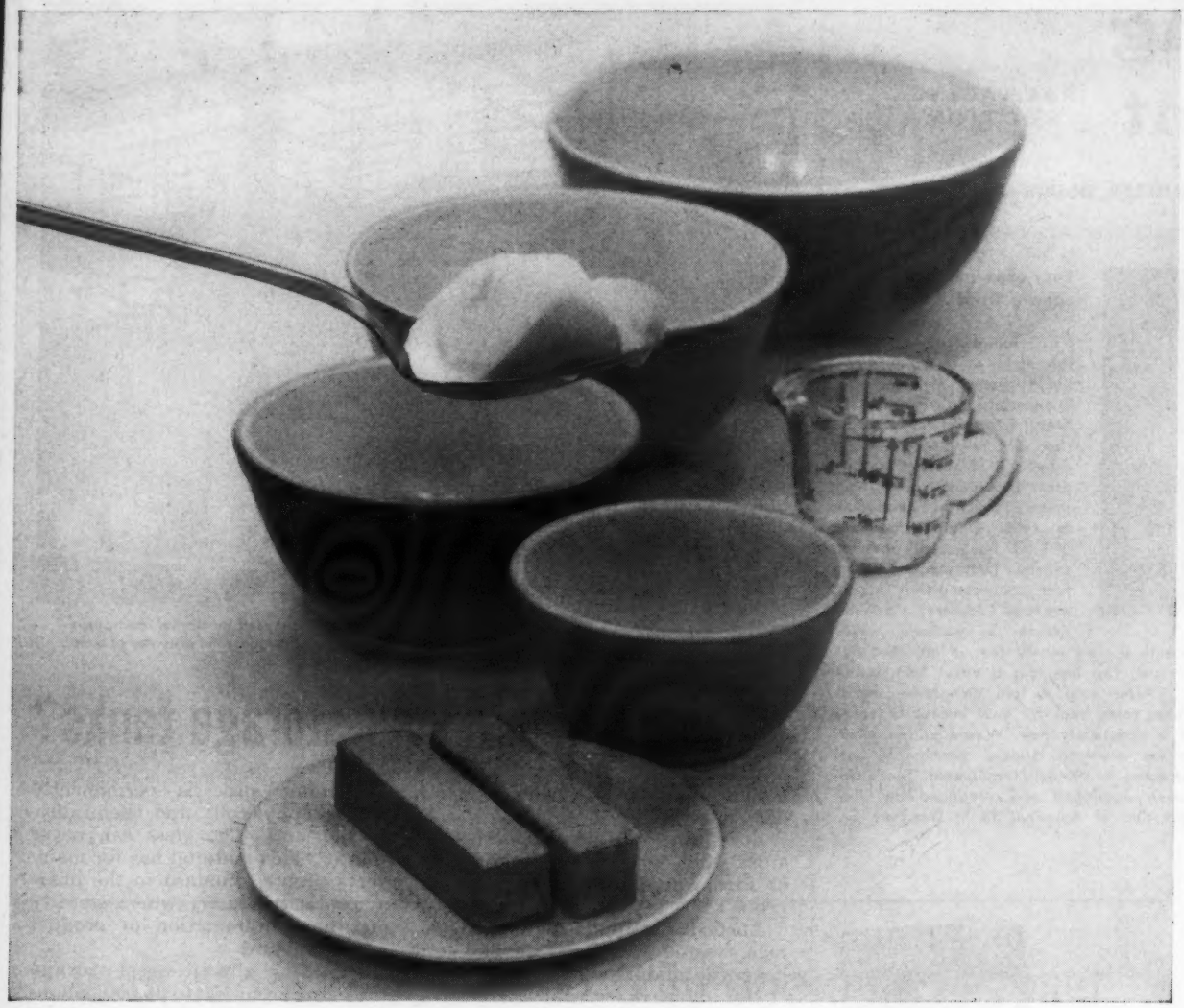

Who likes
Myverol® Distilled Monoglyceride emulsifiers?

The lady on the end of the spoon? Hardly. She never heard of them. Her interest in the shortening she uses extends only to how well it helps her bake nice, light cakes with good texture—and she hasn't the slightest interest in the *Myverol Distilled Monoglycerides* that help bring it about. Same with the margarine. She likes its creamy texture, how it tastes, how well it acts for frying.

The sales manager of the company that made these products? *He* probably knows about *Myverol* and likes the way it imparts qualities to his margarine and shortening that earn choice space on the market shelves.

The food engineer? He likes *Myverol* because it is so free from impurities that he can use it after deodorization without affecting the taste, odor, or color of his products. And he knows exactly how much emulsification he's imparting because it can be added *after* the deodorization process.

The control chemist? He likes *Myverol* because he can count on the uniformity of *Myverol* from shipment to shipment.

The purchasing agent? He likes *Myverol* because he finds his company spending less for this type of emulsifier. It is such concentrated mono that a little goes a very long way—much more than makes up for the slightly higher cost per pound.

Will you like Myverol Distilled Monoglycerides? The only way to find out is to try it. We make it from most fats and oils, will be glad to send you samples, furnish more information. Write *Distillation Products Industries,* Rochester 3, N.Y. Sales offices: New York, Chicago, and Memphis • W. M. Gillies, Inc., West Coast • Charles Albert Smith Limited, Montreal and Toronto.

distillers of monoglycerides made from natural fats and oils

DPi

Also . . . vitamin A in bulk for food and pharmaceuticals

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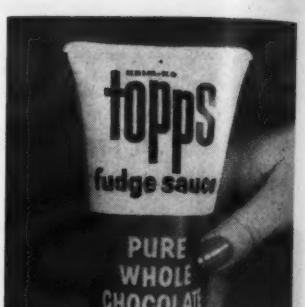


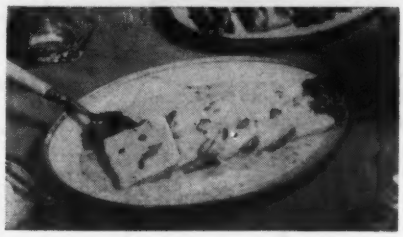
Impressive dispensing . . .

. . . is afforded by the growing array of new Bracon polyethylene squeeze containers by Bradley Container Corp., subsidiary of American Can Co., Maynard, Mass. New idea is package for Topps Chocolate Fudge Sauce, product of Krim-Ko Corp., Chicago. Oversize cap, by Formold Plastics, Inc., 11955 S. Vincennes, Blue Island, Ill., provides solid base. Unbreakable and leak-proof tube allows complete evacuation of fudge sauce or cheddar spread (below), yet remains clean due to unique draw-back action when released. Squeeze can (below) cuts off syrup flow without drip on release. New internal and external coatings for polyethylene are extending number of

food packaging applications. Also important is the product reformulation help (shelf life and dispensing) by American Can Co. laboratories — world's largest for food and container research.

Sophistication in the supermarket . . .

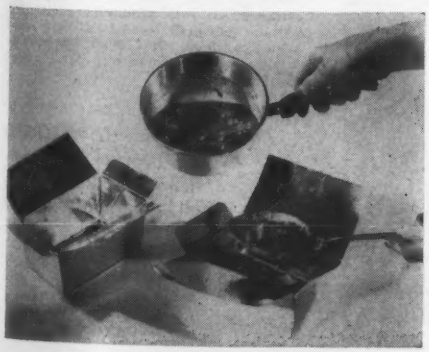
. . . is typified by the packaging for "Around the World Dining" frozen gourmet delicacies of Seabrook Farms Co., Seabrook, N. J. The cartons, lithographed in 4 colors, feature a French Country cafe for Beef Bourguignonne, a Venetian canal scene for Chicken Cacciatore, and a Times Square representation for Swedish Brand Meat Balls, prepared according to recipe of Luchow's, New York restaurant. Prominently displayed "shipping tag" contains brand and product identification, plus such mandatory copy as the essential ingredients and USDA stamp. Line also includes Veal Scallopini, Baked Haddock in Wine (lower photo), Goulash with Noodles, Meat Patty Bavaria, Lentil Soup with Franfurters, Carbonade de Boeuf, Grenadin de Veau, and Filet de Sole. Design by Lippincott and Margulies, Inc., 430 Park Ave., New York 22, N. Y. Packages produced and lithographed by The Lord Baltimore Press, 425 Park Ave., New York 22, N. Y.



Orchids for Carnation . . .

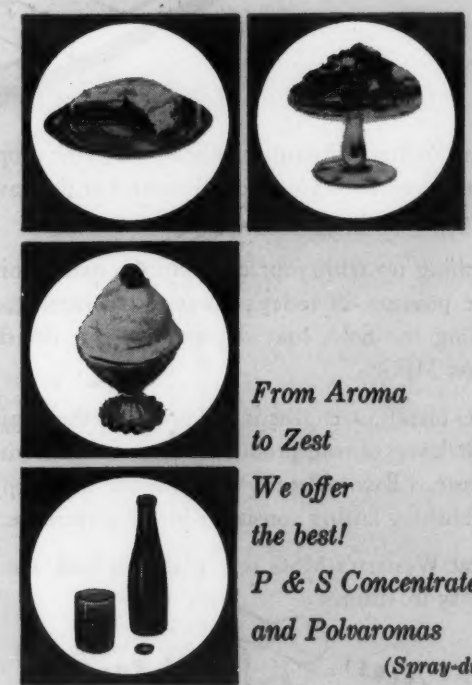
. . . which is packaging its Instant Hot Cocoa Mix in an individual-use pouch with built-in "zipper". C-Zip pouch is made of moisture-proof polyethylene and aluminum foil laminates. To open, user simply tears a pre-cut corner and pulls. The idea also shows promise for containers using aluminum foil coated with heat-sealing lacquers. Company plans to introduce several new consumer and institutional products in the new tear-string package. Package developed and supplied by Western-Waxide Div. of Crown Zellerbach Corp., San Leandro, Calif.

Leakproof carton for liquid lunches . . .



. . employs a foil-laminated cardboard blank and a patented folding process to provide sanitary, effective insulation for hot foods. Simple heat-seal forming operation can be set up in customer plants for quick, on-the-spot packaging of perishables. Tests show frozen vegetables and fruits can be boxed at rates as high as 180 packages/min. "Corner-stone" box is a development of John T. Raisin Co., 70 Berry St., San Francisco, Calif. Aluminum foil supplied by Aluminum Company of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.

SAVOR *with* P&S FLAVOR!



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to Zest
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IS Flavor Control YOUR PROBLEM?

Mono Sodium Glutamate, when used in the proper quantity, is the key to over-all control of the flavor variables involved in food processing.

Catching up with your competition, maintaining your position in today's competitive market, or leading the field, may depend on your decision to use MSG.

MSG blends, strengthens and preserves the natural fresh flavors of your product. It creates a uniformity of taste, a flavor identity which is the first step in establishing lasting consumer brand preference.

Great Western's MSG is available in bulk 100 lb. and 25 lb. drums.

THE SECRET OF GOOD TASTE ®

GREAT WESTERN MSG

99+% Pure Mono Sodium Glutamate Crystals

THE GREAT WESTERN SUGAR COMPANY

Denver, Colorado

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Pritchard sums up . . .

"outstanding"
Growth of the commercial broiler industry is one of the outstanding success stories of modern American agriculture and agricultural marketing.

"no wonder"
With the splendid record of reduced cost of production due to increased feed efficiency, improved breeding, and modern management, it is no wonder that the broiler industry often is viewed as an example of things to come in agriculture.

POULTRY IND

"greatly improved"
The broiler industry took an almost universally liked product — chicken fryers — greatly improved the quality of this product, and made it available not in just one season of the year but at all times and nearly all locations at reasonable prices.

"took over services"
The industry took over the services of slaughtering and eviscerating, formerly performed mainly in stores and homes.

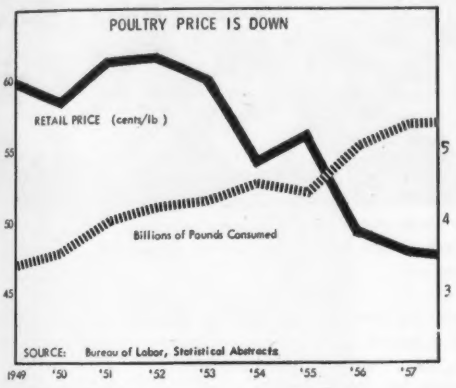
"fitted well"
These services converted poultry meat into a convenience-type, ready-to-cook product that fitted well with the mass merchandising techniques of today's supermarket food stores.

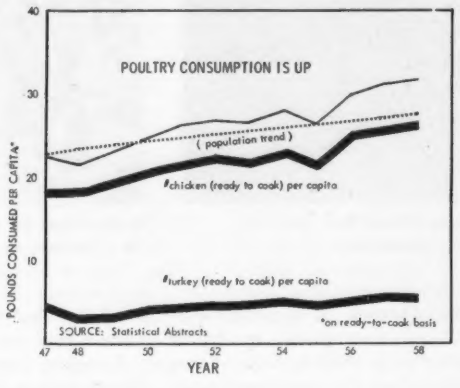
"reduced the price"
At the same time, the industry, by adoption of new production and marketing practices, reduced the retail price so much that even low-income families can afford to buy poultry regularly.

NORRIS T. PRITCHARD
US Dept. of Agriculture
Head of Poultry Section
Market Organization and Costs Branch

FOOD PROCESSING
MAY 1958
VOL. 19 NO. 5

SHOWS THE WAY TO PROFITABLE HIGH VOLUME


POULTRY PRICE IS DOWN
RETAIL PRICE (cents/lb)
Billions of Pounds Consumed
SOURCE: Bureau of Labor, Statistical Abstracts
1949 '50 '51 '52 '53 '54 '55 '56 '57



INDUSTRY'S TWO DECADES OF SMASHING SUCCESS

DR. CLIFF D. CARPENTER, President
Institute of American Poultry Industries

1938 — Poultry produced mainly in farmyard flocks, provided only pin money income for the farm wife "caretaker".

Real profits were either small or haphazard — usually both.

Methods were inefficient, few actual cost records were kept on a business basis.

Producers relied on Sunday and holiday eating for sales.

1958 — Commercial specialized poultry industry becomes well established with large production units.

Flocks of 20,000 broilers cared for by one man are not uncommon — thanks to modern scientific methods of housing and feeding.

Poultry and eggs represent the third largest cash income crop for US farmers.

Consumption of poultry doubles.

Birds bred for specific finished food use. Fed scientifically formulated feeds.

When ready for market, broilers are dressed in nearby towns, packaged according to retailer's specifications, and shipped in truckload lots to specific outlets.

Timetable of Success

These are accomplished facts

- Integrate operations from hatching through processing
- Avoid government assistance
- Gear products for convenience

These are priority projects

- Lower business risks through more producer-processor contracts
- Mechanize to provide expanded, stable markets
- Push promotion of processor brands

Poultry is an economical food for everyday use. Eggs, chickens, and turkeys account for over 10c of every consumer's food dollar.

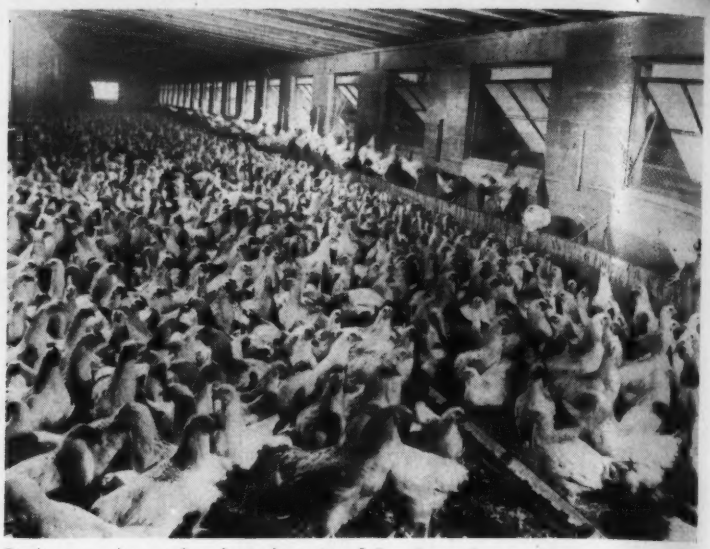
This amazing progress stemmed in great part from widespread application of research in breeding, feeding, processing techniques, and plant sanitation.

Integration also played an important part to up the poultryman's position. As one prominent poultryman, Chester Franz, said at the 1957 Poultry Fact Finding Conference, "Integration is the style this year, but is it new?

"It seems to me that *vertical* integration, of a sort, has always been going on in the poultry business. For example, when we began putting our New York dressed poultry through an eviscerating room, we 'integrated' a bit — absorbed the work of the retail butcher.

"Our integration record is shown graphically on the next page. It portrays the number of transactions between poultry producer and the consumer. It is not intended to be 'specific', rather a 'general' trend . . . how

30 years ago markets as above directly influenced poultry prices. Today poultrymen use a closely controlled business organization

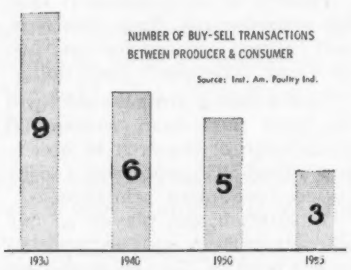


Broilers can be produced at the rate of five "crops" per year, by drawing on the latest results from agricultural research

we 'integrated', 'absorbed', 'took over', or 'eliminated' these transactions over the years."

At this year's Poultry Fact Finding Conference, the talk was on *cooperative* integration — the process through which various independent operators pool their resources and efforts to work together as a closely-knit unit.

G. E. Coleman, Jr, New England breeder, told the Conference, ". . . I believe cooperative rather than vertical integration



will ultimately prevail in our industry.

"We will need increasing amounts of money for production and merchandising — and it will be nearly impossible for any one large organization to acquire it under present tax laws.

"So, I feel cooperative integration is a natural to take over as far as the great volume of our products is concerned. The development of by-products will further encourage this trend.

"This does not mean there won't be many wholly-integrated (vertical) operations in all sections of the country that will be successful in a small way."

In the opinion of a prominent agricultural economist, poultry's phenomonal growth to date stems from freedom of governmental controls.

No government controls

"In the free market economy, the poultry industry has enjoyed rapid growth and change", stated Dr. Harry Love, Virginia Agricultural Experiment Station, at the 1958 Fact Finding Conference. "From this rapid growth and change have come risk and insecurity, causing some to make demands for protection by arresting the free market.

"Under government controls, opportunity is limited and the trend is toward equal rewards for all . . . arresting growth and change, destroying freedom of decision, and curtailing the benefits from science.

"Acceptance of controls by the poultry industry would:

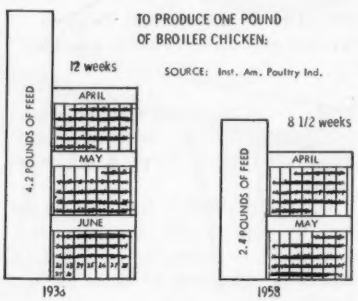
- prevent growth,
- reduce efficiency,
- reduce demand for poultry products,
- limit opportunity,
- make all poorer."

Another means of stabilizing our industry is additional uses for poultry. Poultrymen were among the first to realize the importance of convenience foods.

From results of food research and processing technology, we came out with canned whole fowl. Then followed boneless chicken and turkey meat, chicken and noodles, pot pies and dinners, turkey steaks, precooked and barbecued poultry, ready-stuffed whole poultry, to name just a few convenience items.

Looking ahead is not easy. Nevertheless, we must be "tomorrow-minded" whether we like it or not. And we don't mean "manana".

Much emphasis is placed on the growth of broiler production,



but egg production, too, is not without exciting promises for the future.

Dr. William Jasper, Cornell University, visualizes an expanded egg market, greater price stability, and lower marketing costs.

He told the fact-finders, "Shortly most of our eggs will come from flocks of 2000 to 10,000 birds. These will be serviced by fewer, but larger breeder-hatcherymen and their franchised agencies. Relatively few organizations will handle the eggs between production and retail.

"Egg handling will have to be mechanized. As a practical minimum, it will take 1000 cases per week to justify a mechanized operation. Before long, this minimum will be upped to 2 to 3 thousand."

Dr. Jasper further predicted, "Egg breakers will generally divorce themselves from the fine table egg business. They will shift to breaking high-quality eggs from their own controlled sources of supply. In this way, they can control yolk color.

"High-quality breaking stock will make it possible to completely mechanize breaking operations. Breakers will probably operate on a year-round basis."

Push promotion

As Mr. Coleman pointed out, "We have given our competition 'fits'. Just ask the red meat people. Or, better still, look at their promotion budget and look at ours."

In critically looking at the poultry industry's last 10 years, Mr. Coleman told the fact-finders, "We were right in boosting production, in increasing our efficiency and lowering our costs, in improving quality at the consumer level.

"We were wrong in not studying the market, in not organizing enough sales effort nationally, regionally or locally, in not pushing trade-marks.

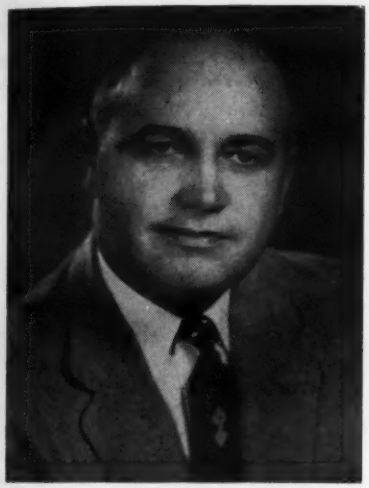
"The more tailoring we do for the consumer," Mr. Coleman reminded the audience, "the greater will be the need for brand identity and the sounder our industry will become price-wise and profit-wise."

Photos courtesy American Poultry Journal

Cool Storage Maintains Quality In Canned Foods

Initial quality preserved for consumer . . . this amounts to "upgrading" the product as it is consumed

DR. L. E. CLIFCORN
Research Division
American Can Company



Dr. L. E. Clifcorn

Today there is renewed interest in the cool warehousing of canned foods despite the economic and technical problems such practice may involve.

The basis for this interest lies in the successful commercial experience with some products and experimental work which has established that cool storage (50-60°F) may substantially extend shelf-life and maintain initial food quality and nutritive value.

Much of the quality advantage gained by the use of improved canning methods, such as HTST or agitating processes may be lost if the canned products are later stored at ambient or warm temperatures (70-90°F).

Protect initial quality

Canned foods cannot be upgraded by cool warehousing, but their original quality grade can be preserved against downgrading. Practically, however, this amounts to upgrading to the consumer and, because of better quality, should bring about an increased acceptance and sale of the products so handled.

Coincidentally, the most heat sensitive canned products — whole milk and orange juice — are also the most storage sensitive. Immediately after canning, these products compare favorably with pasteurized fluid milk and fresh orange juice.

Canned whole milk will retain its original quality for three to six months under refrigeration or cool storage (40-60°F). Canned single strength orange juice, held under the same conditions, will retain its original quality for a year.

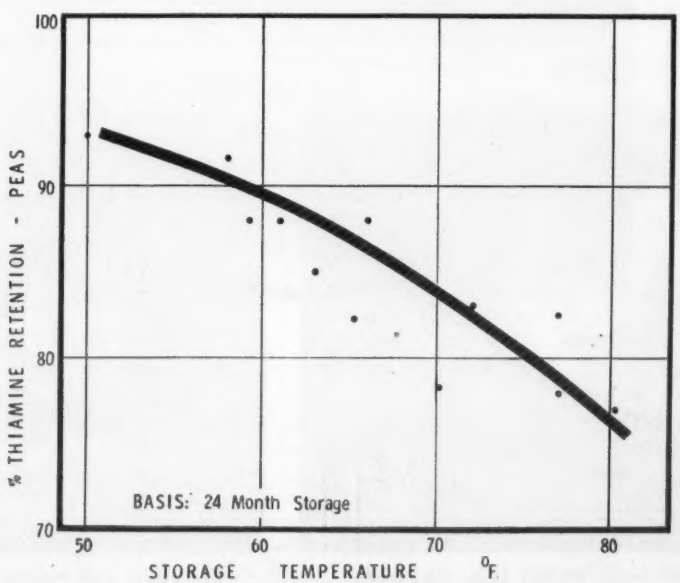
The color, flavor, and nutritive value of certain puréed baby foods are much better retained by HTST processing. However, under general prevailing storage conditions these advantages disappear in as little as three months time.

Also in this general class are canned corn and Blair peas, the latter being processed by a special technique to retain the green color. Refrigeration to cool storage conditions (40-60°F) is necessary if the original high quality of these products is to be maintained.

A bright future is foreseeable for other foods which are preferably distributed in cans. Many products which are partially sterilized or pasteurized for the sake of quality must be held under refrigeration (40-50°F) in order to insure preservation.

Nonsterile luncheon meat and whole hams in cans are very large volume refrigerated products.

Although other cured meat products have been packed in cans by this method, few have been fully developed and intensively promoted. This should offer a fertile field for development of new canned meats dependent on refrigeration.



Vitamin retention in peas in relation to storage temperature — usually flavor loss is greater and takes place earlier than vitamin loss, but is parallel to it

Temperature study

In 1945 and 1946, as a part of the National Canners Association-Can Manufacturers Institute Nutrition Program, K. H. Monroe, K. W. Brighton and G. H. Bendix undertook a survey of daily maximum and minimum temperature records taken in 79 warehouses in the US plus four warehouses in the Hawaiian Islands.

The study showed that the yearly average temperature for all warehouses was 67°F.

In July and August all warehouses were over 70°F average, with most averaging over 80°F. Two US warehouses averaged 92°F for these months. Those in the Hawaiian Islands averaged close to 80°F.

While some storage locations did not show the high temperature-long time conditions originally anticipated, the magnitude of most time-temperature storage relationships was not favorable to maximum retention of initial quality and food values in the products included.

Extensive time-temperature-taste studies on frozen foods (See April FP) have

(*Continued on page 35*)

'Hybrid corn' success repeated with sugar beets

New single-germ seed checks price spiral by allowing full field mechanization

NORTON BASER, Midwest Manager
Western Sugar Beet Producers, Inc.

Beet sugar processors have refined the first commercial crop from a seed which may affect their industry as profoundly as hybrid corn changed the farm economy of Iowa and its neighboring states. It's single-germ seed, and its importance lies in the fact that it is making possible full mechanization of beet sugar field production in many growing areas.

Sugar beet growers everywhere are watching this venture with interest. Its potential is important, too, to price-conscious commercial processors of food from Chicago westward who specify western beet sugar. Because this new seed produces but a single plant and thus cuts in half laborious spring work, it offers an added buffer against spiralling costs.

Last season, enough of the new seed was on hand to plant more than 10,000 acres. This year, single-germ plantings may reach 70,000 acres in Washington, Utah, Idaho, and South Dakota. Elsewhere in the 22 producing states, cultural tests are in full progress to determine best methods of handling this seed.

Attempts to improve field efficiency have been centering around the germinating seed inasmuch as each seedball sends up as many as four or more sprouts. To assure optimum

Recent industry efforts to lower costs

Only by persistent and diligent efforts to improve its efficiency has the domestic industry been able to compete with and even undersell sugar imported from countries where living conditions are inferior to ours.

Here are some facts to prove that sugar beet growers have been lowering production costs, not only by mechanization but by finding better types of fertilizers, time of their application, and other cultural means. In 1956, a whopping 4820 lb of sugar were produced per acre of sugar beets, compared with 2246 lb in 1919. USDA reports as recently as 1948 showed that 10.49 man days were required per acre in sugar beet fields; by 1955 this had dropped to 8.67 man days per acre — a 17.5% decrease. This decrease in terms of man days/ton of sugar was 25% — from 5.35 in 1948 to 3.96 man days in 1955.

Phil Smith, general agriculturist for Great Western Sugar Co., predicts single-germ seed will be available to all growers by 1960. Here he examines a monogerm-planted field near Windsor, Colorado

This tractor pulls machine to thin 6 rows of sugar beets, when rows are planted with multi-germ seed. Formerly as many as 30 laborers were needed to manually thin the acreage which this machine can handle

growth, the clumps of seedlings arising from a seedball must be thinned to leave single plant hills. Thinning by traditional methods is a tedious job performed with short-handled hoes.

In recent years, a segmenting and "polishing" process has been successful in reducing the size and number of seeds in the seedball, giving rise to the development of mechanical thinners. Many farmers using machine thinning (see photo) have been able to halve their labor force, and at the same time convert them from short- to long-handled hoes.

Welcome as these improvements have been, the fact remains that even the better varieties of multi-germ seed yield as many or more double plants as they do singles. The new single-germ seed is providing answers to field labor costs.

Other developments now in the plant breeders' laboratories offer advancements just as significant for some areas as the monogram seed is for others. The agriculturist of a California beet sugar company says this about his company's seed research:

"At the present time we have two hybrids, one of them a monogerm, that show considerable improvement in yield and sugar content over varieties now in use. However, the monogerm characteristic in one hybrid seed does not make it any more important to our program than the other hybrid.

Tons of sugar beets, ready for processing, are unloaded at East Grand Forks, Minnesota factory. Each gondola car (below) carries about 40 tons of beets, hopper car (in background) holds 50 tons

"Because of the extreme difficulty in many of our California beet growing areas to obtain adequate stands, it has been the practice to plant large quantities of seed per acre in order to insure a stand of beets. Such heavy plantings defeat many of the advantages of the monogerm seed.

"However, the fact that one of our outstanding hybrids is also a monogerm offsets any reluctance to go ahead with such a variety. We believe the hybrid has a great deal to offer to the sugar industry, and that yields can be increased from 15 to 20% over present varieties."

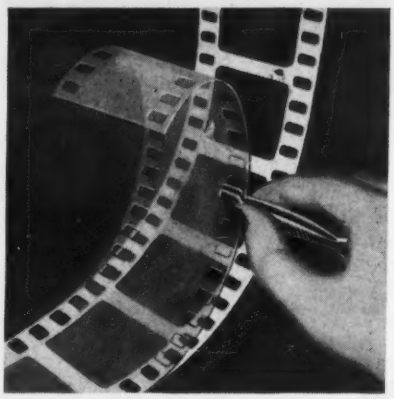
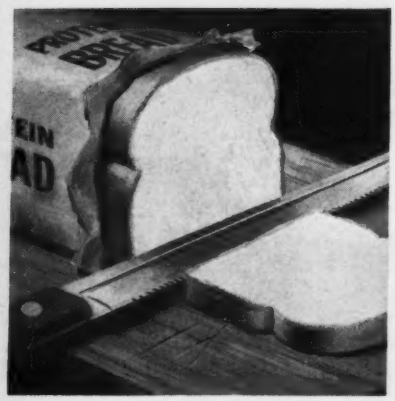
Are commercial hybrids possible?

Will it be possible to develop a commercial hybrid which will yield more sugar, produce the same high tonnage as present varieties, and resist plant diseases?

Preliminary tests indicate it is technically possible to hybridize sugar beets on a commercial scale. Research headquarters for this highly technical problem of plant genetics and pathology is the Beet Sugar Development Foundation in Fort Collins, Colorado, heart of the second most productive sugar beet area in the country.

Unique among agricultural industries, the Foundation combines research facilities of 15 US and Canadian sugar companies,

(*Continued on page* 35)

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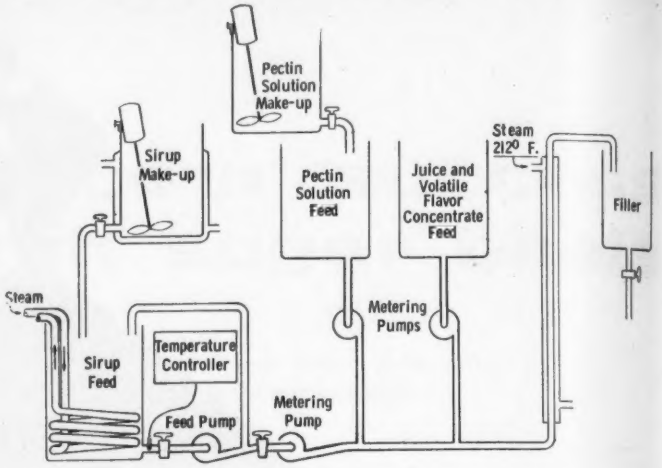
Pilot Plant Continuous Jelly Process



NEW CONTINUOUS JELLY — SIMPLICITY,

No heat damage, better color, flavor than batch cooking. Potential savings on ingredients

Uses concentrated juice, flavor essence. No cooking needed — ingredients metered, mixed in tube

KARL ROBE, Associate Editor

Material furnished and checked by **J. D. PONTING, D. W. SANCHUCK,** and **J. E. BREKKE,** who developed process at USDA's Western Regional Research Laboratory, WURDD-USDA, Albany, Calif.

Problem: Continuous jelly making processes have been tried many times in the past, but few have ever survived actual day-to-day plant operations.

One big trouble is that varieties of jellies are produced in most plants in relatively small batches. These do not lend themselves to the sustained runs necessary in a continuous operation. And they all have a common failing — the processes are complex and intricate requiring skilled operation and maintenance.

Solution: A relatively simple system for continuous jelly making has been evolved at Western Utilization Research and Development Division, USDA, in Albany, Calif. The basic idea is built around the use of concentrated juice (See diagram and photo).

This juice is metered by pump into a pipe. Another metering pump adds sugar solution, and a third pump adds correct proportion of pectin solution to the common pipe. Mixture of all the ingredients takes place in the pipe as mixture is pumped through the pipe and jacketed heat exchanger to the filler.

Successful Processing Tips

In more detail, here are successful tips from WURDD scientists for making jelly continuously. Sirup made from dry sucrose is boiled to remove air bubbles. If not removed, the bubbles form an unsightly scum in the jelly. Ten to twenty percent invert sugar is added to prevent crystallization of sucrose in the cooled jelly.

Pectin is dissolved in water to make a 4 percent solution. This is added to hot sirup (near boiling point). If pectin solution were added to cold sirup, precipitation and a

(*Continued on page* 35)

The three metering pumps, shown in diagram of pilot plant, feed the three ingredient components (sugar, pectin, and concentrate-essence-acid mixtures) into a common tube where mixing takes place. Mixing continues through heat exchanger prior to filling

PROCESS — FLEXIBILITY

Pilot plant at WURDD for continuous jelly making

JELLY FORMULA
CONTINUOUS PROCESS

(Strawberry: typical values)
(For 100 lb 50/50 jelly)

SIRUP:	
78.3 lb 77° Brix (containing 7.8 lb invert sirup)	60.3 lb sugar
JUICE CONCENTRATE:	
11.7 lb 41.9° Brix* (containing 0.12 lb 100 fold volatile flavor concentrate and 0.2 lb citric acid)	4.8 lb sugar
	65.1 lb sugar
PECTIN:	
10.0 lb 4% aqueous solution	

*Equivalent to 60.3 lb 8° Brix Juice

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* U. S. Patents 2571867 and 2571948

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A NEW ERA IN

A FEW WEEKS AGO, Rutgers University changed its *Department of Food Technology* to the *Department of Food Science.*

This change in name by itself could be considered trivial. But it is one more indication that marks the ending of an era which began twenty years ago.

At that time a movement took place among scientific experts of the food industry and educators of food sciences which led to the founding of the Institute of Food Technologists.

In their enthusiasm for this new venture, some of the founding fathers at colleges and universities began offering programs of instruction leading to a degree in food technology. Eventually, 20 to 30 schools came to offer such courses.

From the beginning there were a few exceptional men who had the foresight to question the wisdom of establishing such courses. These men, some prominent in past affairs of the IFT, maintained that real advances in the food industry would require training at a professional level in science and engineering.

Expedience ruled

They questioned the advisability of establishing college courses in food technology which would be mostly descriptive in nature.

Nevertheless these courses did fill a need of the industry for skilled technicians — men trained for production and quality control. Many companies, especially the smaller ones in the food industry, still have such a primary need.

But if some of the employers were being satisfied by this expedient, what about the students? They were being defrauded.

Potential trailblazers in advancing the frontiers of food processing were schooled to be able technicians restricted, for the most part, to the settled domain of established technology.

Does this not explain — in part, at least — why most Departments of Food Technology have always had difficulty in securing adequate numbers of students?

Now some of the schools did provide the substance of a professional technical education. They have been handicapped, however, by relatively overambitious objectives.

The role of the food technologist on a professional level is to apply scientific information to industrial processes. Therefore, it was considered necessary to take over a good part of what is ordinarily recognized as the engineering function.

That there was and is a need for engineers who can more proficiently apply engineering to food processes is not disputed. But is it possible to add engineering at a professional level to a non-engineering course?

In such a comprehensive program "How would you design it" and

Commentary from George Garnatz

IFT PRESIDENT, 1956-57

Cincinnati, Ohio — From earlier conversations we had on this subject, I am sure that you and I agree that between us we do not have the final answer. Nevertheless, I would encourage you to go ahead with your editorial for it is provocative.

The answer to this problem will be forthcoming sooner if sustained and concerted emphasis is placed upon the question of educating food technologists.

I believe we should build progressively on the basic curriculum proposed by last year's Sub-Committee on Accreditation. Maybe it is not the final answer.

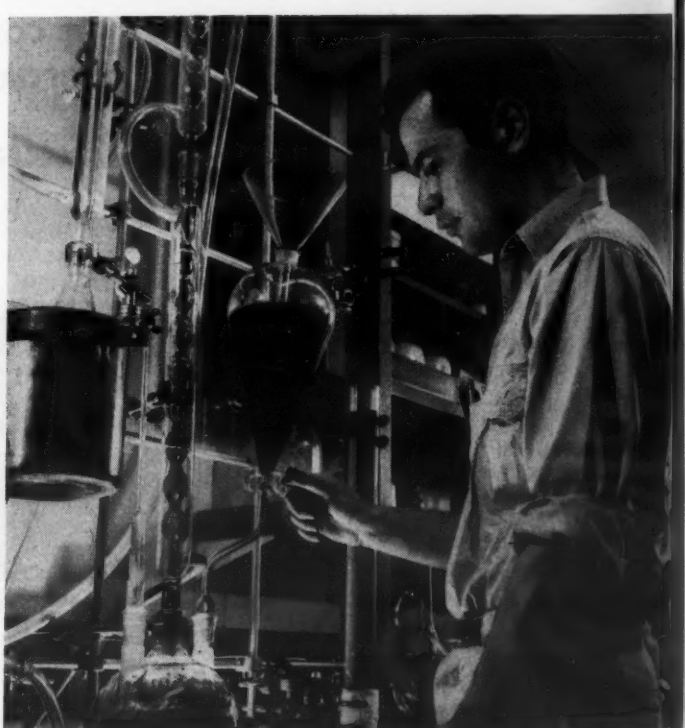
Maybe the final answer does not reside in *a* "Perfect" course. But consistent and persistent effort coupled with a spirit of give and take by those in the field of education should eventually evolve into something workable.

I think a broader view needs to be taken by the educators. I find too many instances where individuals are over-committed to a particular set of conditions under which they happen to be working.

In my opinion there should be a basic four- or five-year course in food technology for personnel trained to do the job of quality control and application of food science to food processing and packaging. There should also be a post-graduate course with two options, namely, food science and food engineering.

Then in the larger organizations or in those instances where a higher degree of specialization is practiced such personnel should be augmented from the various disciplines within the fields of engineering and science. The most important thing to keep in mind is that we need to study this question consistently and intensively. In doing so we need to keep an open mind and must avoid channeling our thinking along narrow restricting lines.

(*Continued on page* 35)



Working with many other professionally trained people to bring better foods to the world, a chemical engineer studies a phase of the Instant Sanka process at the new GF Research Center

EDUCATION

. . . of men for the food industry promises to advance food processing technology faster in the years ahead

"why" have to be neglected. "Describe" and "memorize" take over.

Those schools which persisted in seeking to offer a professional level of education found that they were requiring more and more "tough" courses . . . and frequently an extra year. A year that students preparing for other industries found unnecessary.

Industry, educators to meet

Just how should we train men for the food industry? This has already been the subject of many earnest and learned discussions.

Later this month, some forty or more educators and men from industry will meet. Their three-day session will be the most serious attempt to date to reach some sort of an agreement.

Why should the solution to this problem long continue to be different from that for related, modern industries? To prepare a student for a career in the chemical industry, he is not offered a course in chemical technology but courses leading to a degree in chemistry *or* chemical engineering.

A four-year course leading to a degree in food engineering was actually established at Illinois Institute of Technology a number of years ago. However, to secure professional status for the graduates of this course, recommendations have been made by the head of department to offer it as an option in the Department of Chemical Engineering.

In this way, students would receive a degree in the recognized profession of chemical engineering — an accredited course of instruction. In the food engineering option they would receive special instruction so that they can apply more readily their engineering training to food processing.

More recently, as previously noted, Rutgers University changed the name of its four-year course from food technology to food science. This change was made to emphasize that the training is above trade-school level.

Students in food science have to take chemistry through physical chemistry, math through calculus, a year of physics, and a year of engineering. The Department of Food Science "sees" its students for the first time in their senior year. There is no training in jams and jelly making, etc.

Whatever the answer worked out at other schools, or the terminology involved, efforts to train men for the food industry on a more professional level should be widely encouraged.

As more science replaces art in this new era of education, the technology of food processing will advance much faster.

Samuel P. Miller
Editor

Commentary from Emil Mrak

IFT President, 1957-58

Davis, California — It is my firm belief that the whole area of food technology teaching and research is so new that we need provocative discussions and above all to arrive at some conclusions as to what the various aspects are. You have done a very nice job in establishing points for discussion.

We at California believe that if a person is to be an engineer he must go through a curriculum in engineering. If he is to work in the food industry then we believe we can help him if he will spend one or two graduate years with us working on problems relating to the food industries and at the same time obtain the MS degree.

As a matter of fact I hope within the next year or so we will have an agreement with the Department of Chemical Engineering in Berkeley and also the Department of Agricultural Engineering at Davis whereby such an agreement can be worked out.

Right now the Department of Agricultural Engineering does have one man attached to our department who is a chemical engineer from M.I.T. While he is a member of the Department of Agricultural Engineering he does all his work in our department and I try to support him.

You will also be interested in knowing that we do not give the PhD in Food Technology and I would say that practically every member of the department agrees that we should not give a PhD in Food Technology.

We have built our department on the so-called full spectrum basis whereby we have a group of scientists who are as well qualified in their fields as people in biochemistry, microbiology, chem engineering, physiology, and so forth.

These people offer degrees in the fields in which they are most competent. For example, Whitaker, Bernhard, Chichester, and Tappel offer PhD degrees in the fields of agricultural chemistry and comparative biochemistry. Sterling also offers degrees in agricultural chemistry, but in addition plant physiology.

The graduate school at California recognizes these scientists and permits them to take students for degrees in these basic fields.

The students, however, must fill all the requirements of the basic fields. For example, a student taking his degree in comparative biochemistry would be compelled to fill the same requirements as a student taking a degree with Wendal Stanley In the Department of Biochemistry.

The one difference is that students working with us take, in addition to the requirements for basic discipline, food technology courses and work on a problem, though basic, of interest to the field of food technology.

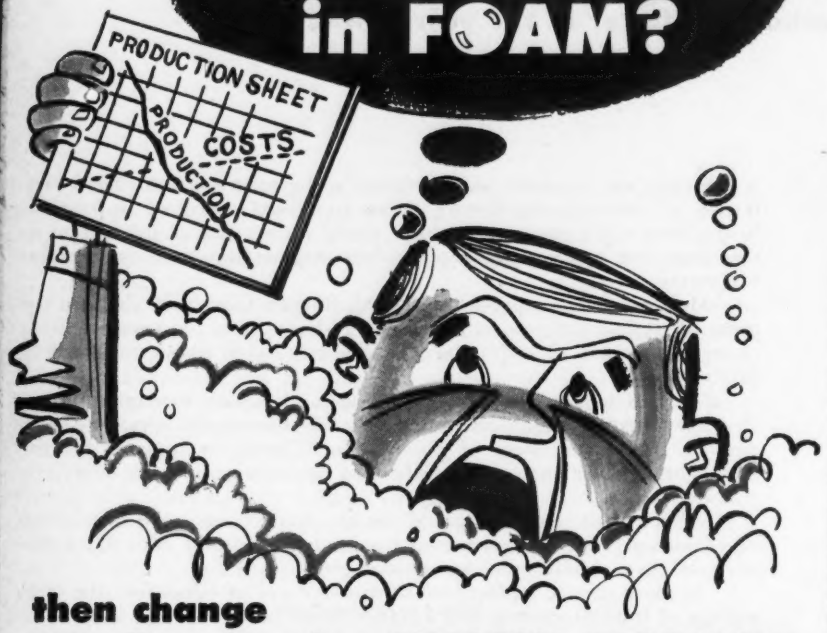
For example, Tappel has been working on the kinetics of heme catalysis of fat oxidations, Chichester is working on the biogenesis of carotenoid pigments, Whitaker is working on kinetics of ficin reactions and Bernhard on the chemistry of flavors and so forth. Sterling has started a new program that is really in the area of physical chemistry and mathematics that we term rheology.

In addition to the scientists who are well established in the basic disciplines as indicated above we have a group of technologists. These people are interested in the process. For example, Leonard is interested in canning, Marsh in juices and concentrates, York in pickling and two new additional staff members will devote their efforts to the technology of freezing and dehydration.

We have wondered a great deal as to what our training should be, and at what we should aim. We make no bones about it that our four-year students should not ordinarily go into re-

(*Continued on page* 35)

up to your ears in FOAM?



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Oil system
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Rise in food prices caused by inflation not convenience—USDA

An interesting view on the controversial marketing spread issue is that of the USDA, which says that marketing costs more because of a rise in over-all expenses. According to the USDA a "substantial part of the increase of more than $20 billion in the over-all marketing bill from 1940 to 1956 was caused by the general increase in cost levels associated with the inflationary price rises since 1940."

In answer to the theory that "built-in maid service" is responsible for rising food costs, the USDA said this:

"Consumers are buying more processed, ready-prepared, and convenience foods now than ever before. But these added marketing services, the so-called built-in maid services, do not seem to account for a major part of the rise in the marketing bill in recent years which . . . . . was largely the result of increases in volume and unit marketing charges."

The Agriculture Department points out that many of the processed foods on today's grocery shelves cost little if any more than the same food in a less highly processed form. Savings in transportation and storage of highly perishable products and new technology have offset the cost of added processing for many products.

Furthermore, the USDA adds, "The modern homemaker is still price conscious to the extent that the convenience foods that give her the best bargains are the ones that have the best sales record."

Not all changes in marketing services have resulted in lower costs — for instance, the trend toward smaller containers which raise product prices because of added packaging material, labor and handling costs.

Complete information is available in a 165-pg booklet, "Farm-Retail Spreads for Food Products" (AMS Miscellaneous Publication No. 741). It's available at $1.00 from the US Government Printing Office, Washington 25, D.C.

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Cool Storage

(*Continued from page* 27)

demonstrated that flavor changes parallel changes in vitamin retention. In fact, flavor loss often precedes vitamin loss.

Data on canned peas show that at a maximum warehouse temperature between 57 and 67°F, approximately 85 to 90 percent of the thiamine of the freshly canned product is retained during 24 months storage (See graph).

Since flavor and vitamin retention generally run parallel, flavor changes can be expected to be moderate.

Taste tests on samples of orange juice, held at controlled temperatures between 0 and 70°F, indicated that flavor changes were greatest above 50°F. Samples stored below 50°F were rated good by most tasters.

And only slight flavor diferences were noted for samples held at 40, 30 and 0°F.

Cool prospects

Some have stated doubt whether the canning industry would accept refrigerated warehousing of the canned foods that are usually sold from the grocery shelf.

To cover the cost of refrigerated warehouses, a premium price would have to be placed on the package. Proposals for refrigerated storage have been rejected by some canners on the basis of the investment involved in comparison with the probable returns.

However, storage temperature can be lowered by insulating the warehouses or using heat reflecting paints, vents, or mechanical venting. In addition, the use of pallets has made it easier to cool stacks of cases to warehouse temperature since horizontal and vertical channels are provided for air circulation.

One proposal currently being given serious consideration: have the canner place his pack in cool storage immediately after processing. That is, during the hot months of late summer. Then after September the refrigeration would be disconnected.

The canning industry faces a long range problem in regard to flavor and nutrient quality of canned foods as affected by adverse storage temperatures.

Dr. Olin Ball at Rutgers University is presently conducting work along these lines. At present the canner and the broker must be more fully acquainted with the advantages of cool storage of canned foods. ◀

Jelly Process

(*Continued from page* 30)

starchy tasting jelly would result.

A 4 to 5 fold juice concentrate was tried in most runs at WURDD. This concentrate can be added anywhere in the process. However, adding the juice concentrate while cold, at the last point in the process, protects juice against heat damage and loss of flavors.

Volatile flavor essence can be added at the same time, if desired. Acid is added last (mixed with the concentrate) to prevent premature setting.

There is little heat drop when the cold juice is added, since roughly 90 percent of the weight of the ingredients is in the hot sugar and pectin solutions. For this reason, minimum heat exchange capacity is needed to bring the solution up to temperature for filling.

Results: On a pilot plant basis at WURDD, jellies made by continuous process have a much brighter color than available commercial samples. Savings in labor and capital investment over batch methods are readily obtainable.

Furthermore, the system can handle relatively small, individual batches with minimum effort for making change-over to a new formula. In most cases, this change-over could be made by having an extra make-up tank in which concentrate for the new jelly variety is mixed.

Next month FOOD PROCESSING will publish a buyer's guide of juice concentrates and volatile flavor concentrates.

Continuous jelly making process is a development of Western Utilization Research and Development Division, USDA, 800 Buchanan St., Albany 10, Calif. ◀

Education

(GARNATZ—*Cont from page* 32)

We must not become discouraged too readily for lack of immediate success, for the problem is one of relatively recent origin and is complex.

George Garnatz
Director, The Kroger Food Foundation

(MRAK—*Cont from page* 33)

search. On the other hand, we believe that they can fill an increasing need for college-trained men in production.

The one question that I would pose with respect to your editorial is what do you expect these students to do. What would you expect a student trained in food technology or food science to do? I have the impression that you are thinking only in terms of research. If this is the case then I would say that there are very few institutions in this country teaching food technology and offering degrees in this field that train research people.

I would encourage such provocative discussions for I believe they can help take us out of the "woods".

Emil Mrak
Head, Dept. of Food Technology
University of California

Editors comment

● As Mrak points out, he has the impression that in my approach to education of students for a career in the food industry, I am thinking only in terms of research.

What I am emphasizing is training of students in the why rather than in the how . . . in the analytical rather than the descriptive . . . whether the training be in processing, packaging, plant design, or administration.

It is my personal conviction that a student has a better chance of success in production, research, technical sales, administration, if his thinking follows the scientific pattern.

Howard P. Milleville
Editor

Sugar Beets

(*Continued from page* 29)

USDA agronomists, scientists in colleges and universities, and 500 members of the American Society of Sugar Beet Technologists.

"Our goal," says engineer Jim Fischer, secretary-treasurer of the Foundation, "is to duplicate the work of corn scientists whose hybrids increased yields 20 to 25 percent.

"Such an increase for our industry would raise the value of a 30-acre crop of sugar beets by $1500.

What is ideal hybrid?

One of the nation's top plant genetecists, Dr. LeRoy Powers, head of the USDA experiment station at Fort Collins states:

"There is no reason why we cannot equal the gains of corn with a sugar beet hybrid. In the next 10 years, hybrids will be grown commercially. It will be long, slow work, but we are confident we can produce commercial hybrids containing all the disease-resistant qualities in present varieties and with characteristics to produce higher tonnage and bigger sugar yields."

Dr. Powers already has grown one hybrid that retains high sugar content and purity when fertilized with heavy applications of nitrogen, an important finding because nitrogen increases tonnages but often depresses sugar content of the beets. A heavy tonnage beet with high sugar level is the ideal.

The next step will be to develop the single-germ character into the hybrid — and research is very close to succeeding. Then growers may have the ideal beet: a strong single plant of high tonnage and sugar, resistant to nematodes, and to curly top, black root, and other diseases. Single germ hybrid seeds, teamed with new precision planters, with chemical weed controls and improved cultivators and harvesters will provide a 100% mechanized field-factory operation. ◀

Non-pressurized Aroclor liquid-heating gives easily controlled, even heat—makes New Era Potato Chips more uniform...golden...delicious

Now . . . a non-pressurized liquid-heating system using Monsanto's heat-transfer fluid, Aroclor 1248, has unlocked new quality for Nicolay-Dancey, Inc., producers of New Era Potato Chips. Called the Uniform Heat Control* process, it employs the "double-boiler" principle of indirect heating to protect against scorching and overcooking, to preserve flavors at their peak.

"Deep-fat frying," cooking in the 340-380° F. range, is the most critical operation in potato chip production. The chefs regulate temperatures to meet the cooking requirements of each new batch of potatoes—poor temperature control or uneven heating can cause flavor losses, scorching or unnatural browning, and shorter shelf life.

Direct heating systems often do not give good temperature control or even heat. Cooking temperatures cannot be lowered quickly—heat is stored in the refractory lining of the combustion chamber and continues to flow into the kettle long after burner input is cut. Overheating and "hot spots" can occur easily—especially in the film of fat on the bottom of the cooking kettle adjacent to the combustion chamber where the temperatures range from 2500 to 3500° F.

In the UHC process, liquid Aroclor absorbs BTU's from the combustion chamber and delivers them gently to the cooking fat. Flame heat never comes in contact with the kettles. Fat temperatures are easily regulated. Total temperature variations of 1° F. in the fat and 2° F. in the Aroclor have been recorded in sustained high production. New Era Potato Chip makers say that their product has a "more uniform, evenly cooked golden color, and taste never before achieved."

*T.M. Nicolay-Dancey, Inc.

If you process food—from canned soups to fried foods—write Monsanto for sources of non-pressurized Aroclor heating systems.

COULD YOUR FOOD PROCESSING USE THESE 6 ADVANTAGES OF *UNIFORM* AROCLOR HEATING?

Pin-point control to within 2° F.
Operating temperatures up to 600° F.
Low-cost non-pressurized equipment
Compact space-saving designs
High operating efficiencies
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Monsanto

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Organic Chemicals Division
Dept. IF-2, St. Louis 24, Missouri

Please send more details about Aroclor 1248 liquid-heating and the names of designers and manufacturers of equipment:

Name.....

Company.....*Address*.....

City.....*Zone*.....*State*.....

6720 on Reader Service Slip

Eliminate non-uniformity of flours

Adjusting formula and dough handling for each new shipment no longer necessary

Influence on flour of climate, soil, and new varieties of wheat can now be practically eliminated. No longer need the baker adjust his formula or dough handling each time he shifts to a new shipment of flour if he uses flour standardized by air classification methods.

Flour produced by the conventional milling system is composed of particles small enough to easily pass through the finest bolting cloth. Yet these particles not only vary in size range but vary in composition.

The interior of the wheat kernel is actually non-uniform in its makeup. In the center are the largest-size flour cells with lowest ash and protein content.

We now know that flour is not a powder milled from a homogeneous uniform grain interior or endosperm.

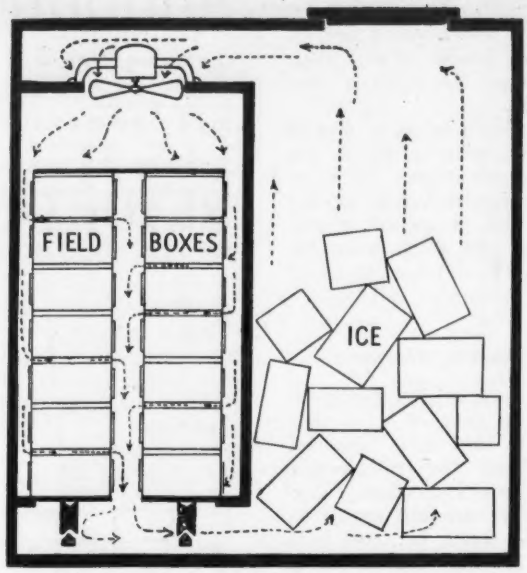
Within one flour from the same wheat one can distinguish all sizes of endosperm flour particles as well as cell wall matter, free starch granules, particles of free protein, and starch particles with protein adhering thereto.

Through an air classification process, all types of flours can be fractionated into individual groups according to inherent chemical, physical, and baking properties.

Fortunately from the economic point of view, it is not necessary to produce separate particle size fractions from each flour. The important process step is to remove that fraction or sufficient portion of it which adversely influences the making of the baked product for which it was intended.

For example, in the conventional milling of a good all-winter Kansas bread flour, approximately 30 percent of the flour contains a starch low-protein material which is well suited for cake making, not bread making. The re-

(*Continued on page 78*)



Circulation of air in forced draft (flow-directed) air cooling is shown in above diagram. Overhead fan pushes air down around outside of stacks. Air then flows through lugs to center and out bottom opening. From there it goes across and up through ice back to fan for recirculation

Flow-directed air stream through containers . . .

COOLS SIX TIMES FASTER THAN COLD STORAGE

KARL ROBE, Associate Editor
Data furnished and article checked by
RENE GUILLOU, Associate Specialist, Agricultural Engineering Dept., University of California, Davis, California; and **VINCENT GESSEL,** Temperature Engineering Co., Alhambra, California

A number of methods have been traditional for removing heat from fruits and vegetables either for fresh shipment or for processing.

These methods include still storage in refrigerated rooms; forced air cooling by directing air-blasts against the products in storage rooms or tunnels; direct icing of product; hydrocooling in which product is immersed in chilled water; and — for leafy vegetables — vacuum cooling.

Within the past two or three years, a new use of forced air has been under development by the University of California, at Davis, Calif. Several commercial units are now in operation as of this year, based on the University's designs. Method is cooling by low-velocity air flow directed

(*Continued on next page*)

Portable unit for forced draft (flow-directed) air cooling is shown in use by University of California. Permanent units, holding several carloads of fruit, are now in commercial use based on this design

Here's a Whole
REDIJELS
Pregelatinized Custom-Made Starches

FOOD USE	F-13	78-D	2	4	A-78	DDP	PFP	PFW
Instant Puddings	●	●	●		●			
Convenience Desserts	●	●	●		●			
Cake Mixes						●	●	●
Muffin Mixes						●	●	●
Cookie Mixes						●	●	●
Pie & Cake Fillings		●		●				
Pie Crust Mixes								●
Confectionery Items				●				
Soup Mixes	●	●			●	●	●	●
Batters, Pancake, Breading	●	●				●	●	●
Doughnut Mixes								●
Toppings	●			●				
Ground Meat and Fish Products				●		●	●	●
Instant Sauces and Gravies		●	●		●			
Dressings Salad-Mayonnaise-type	●				●			
Milk Beverage Stabilizers	●							
Dietetic-Convenience Mixes-Baby Foods					●			

Here's *hot* news on *cold-swelling** starches developed to help you build business and profit with many of the fastest-selling food products of the day (see table).

M-P announces a whole new family of pregelatinized* starches and flours—potato, arrowroot, tapioca—all bland and free from cereal taste so that you can reduce costly flavor additions.

Eight standard grades (see table above) have already found eager buyers. But, we'll blend, compound, modify, and pregelatinize* to your specifications—or have our Food Laboratory develop formulations and recommendations for you in confidence.

M-P REDIJELS reduce the cooking equipment you need . . . give you better control over food characteristics from your plant to ultimate consumer . . . make new convenience foods and specialty items possible . . . offer you faster solubility and dispersion (notably in cold milk) . . . provide independent control over gel action and thickening . . . add eye and taste appeal.

Get complete information on M-P's REDIJEL line by filling-in and sending the coupon below—now, while you're thinking about it.

*Precooked by the roll-drying process at Morningstar-Paisley's new Haberland facilities.

MORNINGSTAR-PAISLEY, Inc.

TO: MORNINGSTAR-PAISLEY, INC.
630 West 51st Street, New York 19, New York

☐ I am particularly interested in using precooked starches for the following application:

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Company _____
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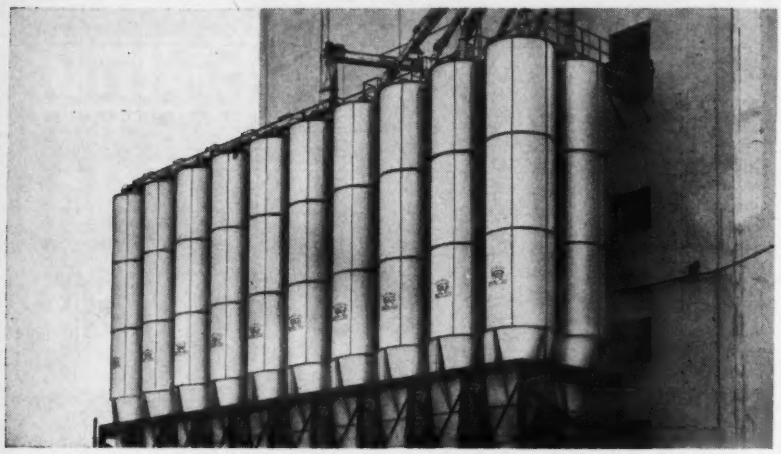
DAY

BULK STORAGE NEWS

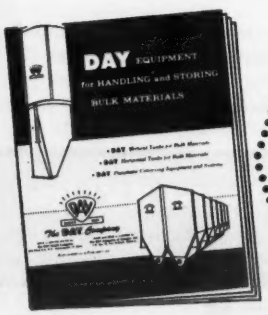


A battery of 20 DAY vertical bulk storage tanks serving packaging line as well as truck and rail car loading operation. Each tank section holds approximately a carload of ingredients.

DAY BULK STORAGE TANKS

No other method stores bulk materials at lower cost

SAVINGS is one of the big advantages of DAY bulk storage and material handling equipment. Typical reports from DAY bulk tank owners tell of savings from 25¢ to 35¢ per hundred pounds of material handled. With DAY tanks, you save container or bag costs, you save labor, you save storage space and you save "invisible loss" because there's no spillage or breakage. DAY tanks improve plant efficiency and keep costs down.



For the most complete line of economical bulk tanks in vertical and horizontal styles, turn toDAY, now. Increase your plant's operating efficiency, lower material handling costs, improve sanitation and housekeeping with DAY bulk tanks. Free bulletin tells how to handle bulk material at lower cost with DAY units. Write toDAY for Bulletin 574.

The **DAY** *Company*

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The DAY SALES Company
848 Third Ave. N.E., Minneapolis 13, Minn.

DAY SINCE 1881

MADE and SOLD in CANADA by
The DAY Company of Canada Limited
25 Brydon Drive, Rexdale (Toronto), Ontario

Representatives in Principal Cities

EQUIPMENT ONLY OR A COMPLETE SYSTEM

6722 on Reader Service Slip

(Continued from preceding page)

through boxed fruit, then through an ice bunker (See diagram).

It is simple to apply, but at the same time effective for given applications. Fruit in regular wooden boxes, for instance, can be cooled in two hours to the same temperature that would take 12 hours in an ordinary refrigerated storage area.

No "special" equipment

Little change in equipment from that necessary for conventional cooling is required. No change in refrigerated storage area is needed, if cold storage is already available. Portable units can be built which can be loaded on a truck, and conveyed to the field or orchard, to remove field heat prior to shipping or processing.

First costs of complete units with ice bunkers have ranged from $1000 to $2500 per ton of fruit cooled per hour. Operating costs are competitive with other methods.

The general principle of forced draft (flow-directed) cooling is to circulate low-velocity air by maintaining slightly higher air pressure — ½ inches of water or above — on one side of a stack. This air flow around the devious paths between the individual fruits or vegetables continuously wipes the exposed surfaces of the product.

System differs from other air-cooling in that a low-pressure differential is responsible for air movement, rather than a high-velocity air blast against or past the containers.

Field installations

So far, cooling by this method has been largely on an exploratory basis. Despite this, during the 1957 season eight installations were built or converted for handling fruit products for fresh shipment. Both peaches and grapes for fresh shipment have been successfully cooled on a commercial scale. Melons, grapes, and celery in cartons have been successfully cooled in rail cars (See article page 104). Successful demonstrations have been conducted

Announcing

the newest, most economical, cooking indicator tag on the market

A·T·I·

RETORT•CHEX

FOR STEAM RETORT OR WATER COOKING

PLUS... a complete new full-line of A.T.I. Cooking Indicators for every need ... and price!

Aseptic-Thermo Indicator Company is proud to announce these additions to its long established quality line of COOK-CHEX. Any A.T.I. tag, when attached to a retort basket, will tell at a glance: 1) The retort basket has, or has not, been through the cooking process. 2) It has, or has not, been subjected to *proper* cooking conditions.

These facts are important because they eliminate the usual problems of: a wrong cooking schedule, keeping baskets in sequence, and the possibility of "losing" uncooked baskets!

Both RETORT-CHEX and COOK-CHEX are now produced with a new, *improved* chemical formula which can be used for either steam retort or water cooking. A *purple* chemical ink turns to *green* only after *your* proper cooking conditions have been met. RETORT-CHEX are available as individual tags with or without reinforced holes and strings, or in tablet form. A.T.I. Indicators also prove excellent as a low cost, permanent record for your cooking-room operation. Be sure of uniform quality in your food products . . . Send today for a complete line of free samples and two informative pamphlets on quality cooking . . . "The COOK-CHEX Story" and "To the Technologist."

USE RELIABLE PRODUCTS BY

ASEPTIC-THERMO INDICATOR COMPANY

SEND FOR FREE SAMPLES AND PAMPHLETS

ASEPTIC-THERMO INDICATOR COMPANY FP-5
11471 Vanowen St., North Hollywood, Calif.

Please send the two informative pamphlets and a FREE supply of new RETORT-CHEX for use with a cooking process of _____ degrees F., for _____ minutes.

Name _____

Position _____

Company _____

Address _____

City _____ Zone _____ State _____

6723 on Reader Service Slip

on apricots, plums, cherries, strawberries, and other such fruits.

For more information on forced draft (flow-directed) air cooling write Agricultural Engineering Dept., Attn. Mr. Rene Guillou, University of California, Davis, Calif.; or to Mr. Vincent Gessel, who originated the use of air blasts downward from ceiling of a room. Mr. Gessel's address: Temperature Engineering Co., 624 South Palm Avenue, Alhambra, Calif.

Avoid 'rusty' cans by treating process water

Causes and prevention of spotting on filled metal containers are explained in one-page technical bulletin.

By thorough study of processors' water supply and production machines and procedures, spotting due to rusting or deposits of lime can be eliminated by adding chemicals to process water.

Shiny filled can at right was retorted and cooled in water treated to avoid spotting. Can processed in untreated water is shown at left

Tech Bul-100 is available from Brooks Chemicals, Inc., 3304 E. 87th St., Cleveland 27, Ohio.

For your copy simply circle 6724 on Reader Service Slip.

Room for smugness?

Read how we've failed in educating tomorrow's technical food people . . . page 32. Do you agree? Let us know.

— The Editors

The case of the dry milk that put body and soul in a soup mix

A manufacturer of soup mixes had succeeded in capturing all the elusive subtleties of a kettle-brewed broth. And was still discontent.

He had envisioned a hearty soup, irreverently lusty, a soup of manly substance. Subtleties be hanged if need be.

Quite rightly he reasoned that a dry milk of unusually high viscosity might provide the needed body, impart the lacking soul. Could Land O'Lakes supply it?

Land O'Lakes could and did. From the Land O'Lakes developmental laboratories, where tailoring dry milk to order is a dedicated daily business, came a dry milk with a viscosity that was nothing short of sheer brawn. And what it did for the soup was nothing short of sudden transmutation. You may taste it one day soon.

Voila! It is soup with body, it is soup with soul!

You, too, may process a product that can benefit from one or more of our dry milks. If we haven't the precise one you need, we can *create* it. Write us. Land O'Lakes Creameries, Inc., Minneapolis 13, Minn.

Land O'Lakes Dry Milks

"Engineered" to fit your product

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SPOTLIGHTING

PACKAGING SECTION

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C. "PETE" CLAPP
Vice President and Dir. of Research
Western Filling Corp.
and KARL ROBE, Associate Editor

Specific pointers, production-line facts on how contract packaging provides . . .

Low-Cost Approach to Presur

I. WHY CONTRACT PACKAGING?

Pressure-spray food packaging is a specialized business just now blossoming into a growth phase. Even as new products are already reaching the market, all technical and production problems haven't been solved.

Expense during development stages of new products are high, particularly when know-how in the field is limited. To the food processor contemplating this pressure-foods field, these factors make contract packaging attractive.

Contract packaging especially appeals to those who do not want to go through the entire development program, with its delays and expenses, but want to test market potential of products.

Western Filling Corp., Los Angeles, is the first contract packager to establish a commercial production line for pressurized food products on a custom basis.

A year of intensive testing and pilot plant work finally evolved the production line pictured here. Further changes in technique are to be expected as more experience is gained.

Pitfalls of pressure-packaging

Product formulation is a first consideration. Western Filling works with the contracting food company to adapt their product to spray-packaging.

In this respect, particle size control is one of the first considerations. Careful preparation of product, plus removal of particles that could plug the spray orifice of the container are must operations.

Shelf life tests for each new change in formulation are also necessary.

Choice of the propellant gas is also a knotty problem which must be worked out for each individual product. Solubility of gases in each specific product and product formulation is the factor here.

Nitrogen gas has low solubility in most food products — therefore does not contribute to foaming under given valve conditions as do more soluble gases.

However, by using gases of greater solubility, a greater safety factor can be achieved against premature exhausting of the gas before all of the product has been removed.

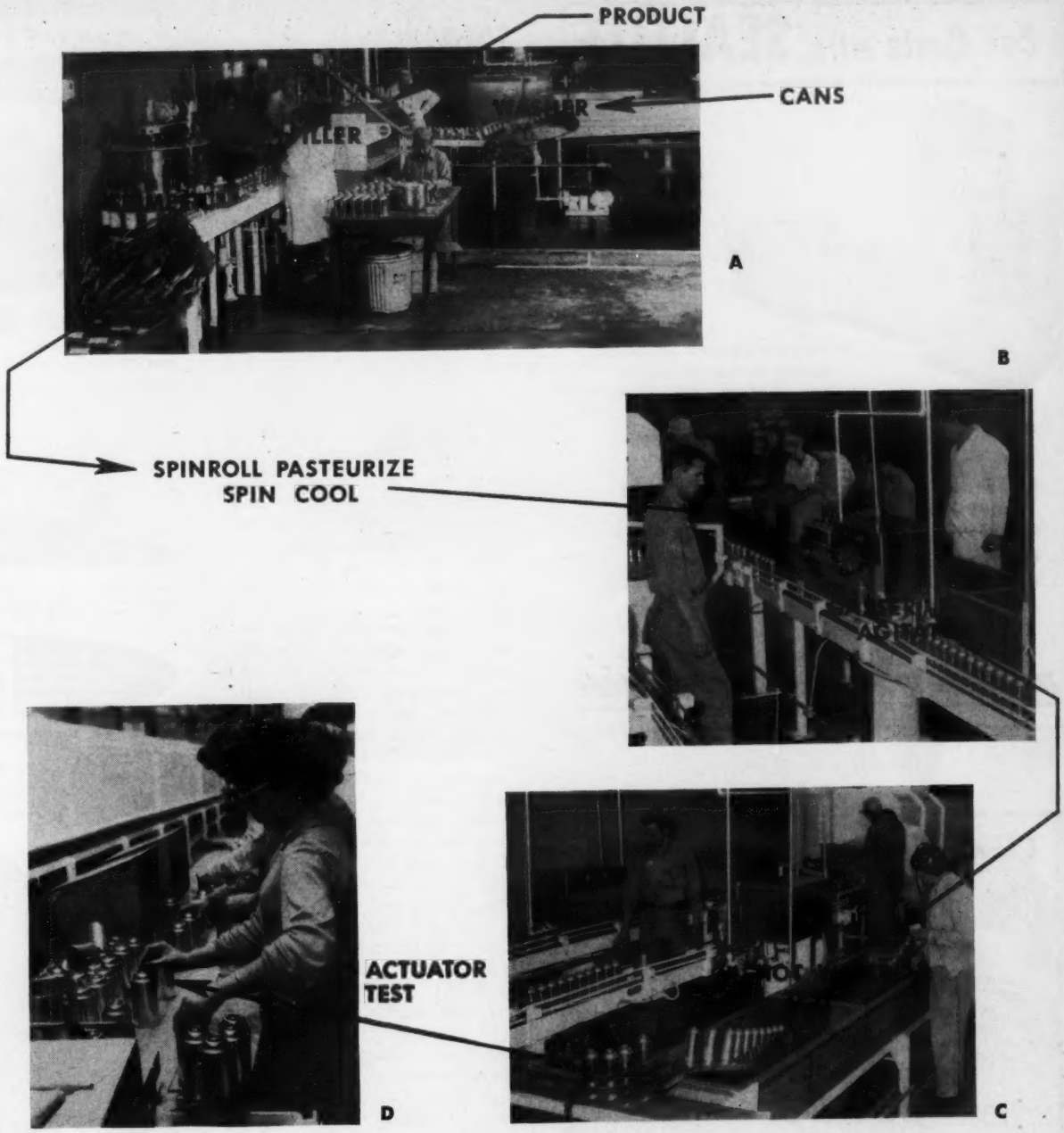
Since solubility of nitrogen is slight, we have found that the maximum amount of gas which can be filled under a given set of static conditions is about 1 to 1½ grams of gas per can. We can gas with three times this amount by using a mixture of nitrous oxide and carbon dioxide — 3 grams per can (standard 12-oz size — 211 x 413) is commonly used.

Less than a half gram of N_2 remains in a fully exhausted N_2 filled can. Since around three times that amount remains in the nitrous oxide-CO_2 can, we have a higher residual pressure reservoir as a safety factor.

Some customers of spray-type products may tend to misuse this type of container, so this safety factor can be important.

We don't have enough complete data yet to know about the comparative losses through valve and seam by different types of gases. The can companies are currently running tests on these

Pressure-dispensed foods such as the 19 test cans of toppings, sauces, and other edibles shown soon will extend the push-button era to meal preparation and serving, predicts American Can Co.



esure Foods

factors. Apparently, gas loss may be as high as 20-25 mg per month over a 6-month period for some products.

Western Filling currently is developing a more sensitive method of detecting this gas loss, using a highly accurate pressure manometer.

Quality control program

The following list of characteristics are checked during production runs at Western Filling: Product viscosity; particle size; soluble and insoluble solids; pH; color; flavor; fill temperature; product fill level; heat exchanger temp; crimp settings; temp. in and out of spin cooler; vacuumizing; internal pressure; leakage; condition of valves after filling. Definite limits on most of these quality factors have already been established and records are kept.

II. PRODUCTION LINE TECHNIQUES

Here's a description of the production line at Western Filling Corp. Product is mixed, then held in a jacketed 800 gal stainless steel tank equipped with agitator. From holding tank product goes through a finisher, then through a homogenizer.

Next it flows through a plate-type heat exchanger to a 10-spout, in-line, piston-type filler (A), where 9 oz of product is filled into washed cans (A).

The valves are then inserted in the cans by hand as cans enter a two-stage crimper (A). In first stage the cans are vacuumized to an average of 20-22 inch-reading on cooled can. In second stage the valve is swedged into the one-inch opening of the can and sealed.

Filled and sealed cans then enter a spin-cooler designed at Western Filling, where they are spin-rolled for a specified time to pasteurize interiors of containers and the valve. Next they enter a sterile water-cooled spin cooler, and emerge with contents around 90°F.

After filling

From spin-cooler the cans proceed to gasser-agitators, (B). These in-line machines each collect a row of 12 cans, grasp them between hold-bars, and fill cans with gas to a specified pressure through the can valves while they are being vigorously shaken. Gas automatically shuts off, agitation stops, and cans are conveyed through a leak-test water tank (C). Here a woman watches for pin-point bubbles to show up any leakers.

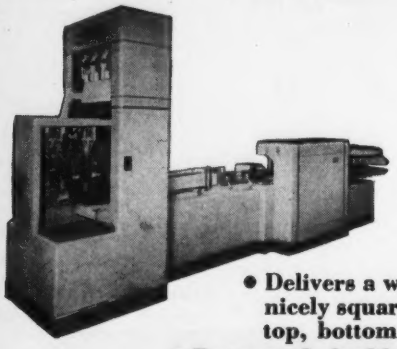
As cans emerge from tester bath, an actuator button is placed on each valve (D). At next station a woman tests each valve by squirting a brief blast of product into a hooded receptacle (D).

Cans are then air-dried, labeled, over-capped, and cased. Line speed of 90 per min can be increased to the filler rate of 225 by adding more gasser-agitator machines to the line as needed. Entire line is 125′ long (250′ total), arranged in a space-saving "U" pattern, as shown on the flow diagram.

Contract packaging and product development for pressure-spray food products as described here are developments of Western Filling Corp., Food Division, 6423 Bandini Blvd., Los Angeles 22, California.

For more information circle 6725 on Reader Service Slip.

Cut Costs with SEALTITE



- Delivers a well settled, nicely squared bag at top, bottom and sides
- Pre-scored, double fold, uniformly glued seal keeps product in and dirt out
- Uses any standard make of gusseted bag — no royalties
- Seal readily opened, yet tamper-proof
- Seals 30 to 50 bags per minute
- Users report costs reduced up to $500.00 per month per machine

Write for complete information

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BUFFALO 13, N.Y.

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CONVEYORIZED PACKAGING
for Speed • Economy • Uniformity

Power Belt Conveyor furnished standard 18"; 22"; 30" O.A. Widths with 12"; 16"; 24" belt widths. Length to suit. Used with gravity roller or wheel conveyors — NYLO-® Bearings.

Tell us your requirements. Our Recommendation is free.

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MFRS. OF WHEEL & ROLLER GRAVITY & LIVE ROLLER CONVEYORS • POWER BELT CONVEYORS • SWITCHES • ACCESSORIES
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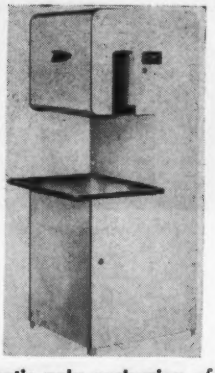
PACKAGING SECTION

NEW EQUIPMENT



Automatic poly packaging of any type of food within the practical size limitation of approximately 4" wide x 18" high x 20" long is offered by new unit.

Cycling time can be as fast as 50 packages per min, depending on method of feed and removal. Unit is adaptable to conveyors, hoppers, chutes, weigh batch, etc.

Operation is completely automatic — weight of material to be packaged initiates operating cycle that results in perfect hairline sealing — on all 4 sides for an airtight package, or on 3 sides to make a "bag" package.

Machine has no switches, levers or buttons — is fully enclosed and can be installed in 5 min. Available with casters for portable applications.

"Universal" automatic polyethylene packaging machine is development of E-Z Packaging Corp., 4850 W. Belmont Ave., Chicago 41, Ill.

For more information circle 6728 on Reader Service Slip.

Hooray for the Recession!

Says Editor Leinen on page 4 of this issue. Do you agree? write:

The Editors
Food Processing
111 E. Delaware Pl.
Chicago 11, Ill.

Always the best...now even better

NEW forward-design **ROLACODER**

AUTOMATIC CASE MARKING AND CODE-DATING ATTACHMENT

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Holds enough ink for a week!

- Extra compact — adaptable to any conveyor, case-sealer, etc.
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Write today for full details about the new "Series 300 Rolacoder" case-marking attachment

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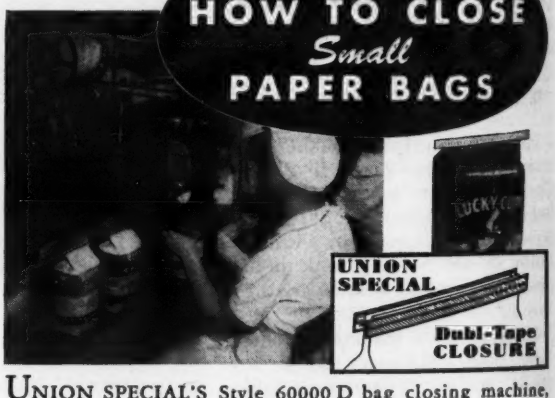
Here's **HOW TO CLOSE** *Small* **PAPER BAGS**



UNION SPECIAL'S Style 60000 D bag closing machine, producing the exclusive Dubl-Tape closure, is designed to speed packaging . . . cut costs . . . and improve appearance.

- **FAST**— Speed to match output of standard filling and weighing equipment.
- **NEAT**— Produces an eye-pleasing, sales-stimulating package with high merchandising value.
- **ECONOMICAL**— Operating cost per bag is at a minimum . . . uses inexpensive cotton thread and paper tape.
- **VERSATILE**— Adjustable for a wide range of bag sizes, short or long runs.

Write for BULLETIN No. 100 to get the complete facts on this machine . . . and how it can do a *better* closing job for you.

Union Special MACHINE COMPANY
432 N. Franklin Street • Chicago 10, Illinois

6730 on Reader Service Slip

Packaging tables

A wide selection of food packaging tables, plus bag staplers, and hot plates are all described and illustrated in a 16-pg cat. Tables are designed to accommodate wrapping materials in sheets or rolls of different sizes.

Catalog No. 58 on heat-sealing equipment for prepackaging is issued by J. B. Dove & Sons Inc., Amber and Westmoreland Sts., Philadelphia 34, Pa.

For your copy circle 6731.

Filling liquids

Catalog uses large photos to explain features of fillers for liquid and semiliquid foods. Under surface, acid, and nitrogen blanket filling developments are described.

Cat 581, 8 pgs, issued by Horix Mfg. Co., Corliss Station, Pittsburgh 4, Pa.

For your copy simply circle 6732.

For more information on product at right, circle 6733 see information request blank opposite last page.

GAYLORD TRIMS
YOUR PACKAGING COSTS

Gaylord's approach to packaging doesn't stop with the corrugated box itself. We take a fresh look at your entire packing and handling cost picture, then tailor a program to your exact measure.

Regular cartons in big volume . . . engineered packaging . . . your nearby Gaylord man knows both. And he is cost-conscious either way.

GAYLORD
CONTAINER CORPORATION

Gaylord Boxes

HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

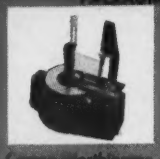
DIVISION OF Crown Zellerbach Corporation

SCIENTIFIC TESTING INSTRUMENTS
MADE BY A
FUNCTIONING LABORATORY

We Make Them More Efficient Because We *Use* Them, Too!
As the only functioning laboratory manufacturing instruments, we harness the talents of the laboratory and the instrument technicians. Result: the instruments are conventional in operation, simple to calibrate, easy to maintain. They are sensitive, stable, and, in most cases, applicable to multi-purpose testing requirements. And all are pre-tested in our own laboratories.

Our instrument service is four-fold: we design and manufacture new instruments; we modify existing instruments to meet special needs; we manufacture instruments from existing designs; we operate new instruments where impartial laboratory reports are essential. Write for our free Instrument Service Bulletins.

FOR THE EVALUATION OF FOOD PACKAGING MATERIALS


Cenco-Worthington Stiffness Tester for pliable sheet forms

Universal Pendulum Impact Tester

An Adjunct Service for the FOOD TECHNOLOGIST

To assist Food Technologists in improving their products and processes and in new product development, we have coordinated a special group of testing laboratories. These concentrate on selection of raw materials, improving and controlling food processing, developing new food formulas, and improving the finished package.

Our Food Testing, Research, and Engineering Program offers the following services adapted to the special requirements of the food industry:

- *Psychometric Evaluation*
- *Chemical Analysis*
- *Microbiological Studies*
- *Toxicological Evaluation of Food Additives*
- *Physical Evaluation of Packaging Materials*
- *Psychometric Evaluation of Package Sales Appeal*
- *Evaluation of Kitchen Appliances and Equipment*

UNITED STATES TESTING COMPANY, INC.
Established 1880
1290 Park Avenue, Hoboken, New Jersey
Boston • Brownsville • Dallas • Denver • Los Angeles • Memphis • New York
Philadelphia • Providence • San Angelo

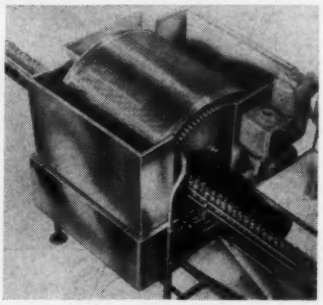
6734 on Reader Service Slip

PACKAGING SECTION

Automatic tumble filler gently packages whole fruits from stuffed olives to plums, vegetables from mushrooms to beets, all cut foods. Products packed wet or dry.

Cans up to #10 size, or jars up to quarts are filled at rate of 150 per min, regardless of shape. Container size may be changed in 1 min; automatic spill-out tipper quickly adjusts for correct filling of each size package.

Filler is principally a horizontal, revolving, open-end drum (lower photo) with fins inside to carry product and drop it into containers as these pass through drum.



As filled jars pass through filler, they are slightly tipped to one side so that excess product rolls from top. This prevents overfill that would damage the fruit or vegetable during capping operation. Tipping is controlled by guide rail, and can be adjusted to size of container and product being packed.

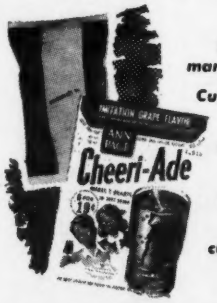
On leaving filler, containers pass over vibrating section of conveyor so that product settles below cap level, further insuring against damage. Amplitude of vibrator also is adjustable.

Compact stainless steel unit is 4′ wide, 8′ long, 5′ high. Complete cleaning can be done in 5 min.

Automatic Tumble Filler is

FOR IMPRINTING
Flexible Wraps and Films
INDUSTRIAL'S Rainbow Coder

Attached to either continuous or intermittent types of packaging, wrapping or overwrapping machines — HAYSSEN, BATTLE CREEK, STOKES, TRANSWRAP, OLIVER, GLOBE, BARTELT, WRAP-AID, etc. — the RAINBOW Coder automatically imprints clearly, sharply and *permanently* at packaging point *all* combinations of colors, letters and numbers for marking, dating or coding your products.



Streamline marking operations
Cut handling costs
Increase volume handled
Reduce inventory costs
Speed up customer service

Everywhere packagers of fresh and frozen foods, baked goods, candies, hosiery, underwear — anything packed in polyethylene, cellophane, waxed paper, glassine, foil, tissue or any material that takes a hot roll leaf impression—know that the RAINBOW Transleaf Coder sets a demanding standard of comparison hard to beat because the RAINBOW Coder contributes so efficiently to profits.

The economical, rugged RAINBOW saves package pre-printing, inventory and storage costs—needs no operator, no ink, no makeready— and next to no maintenance.

Before you buy any marking equipment, take a good look at the RAINBOW CODER —you'll have a standard for comparison! For complete information, write today.

DEPT. FP.

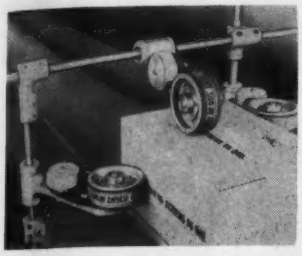
"Rainbow Coder" is a trademark for Industrial's marking equipment.

ime INDUSTRIAL MARKING EQUIPMENT
454 BALTIC STREET, BROOKLYN 17, N.Y.

6735 on Reader Service Slip

product of Solbern Manufacturing Corp., 120 Thirteenth St., Brooklyn 15, N.Y.

For more information circle 6736 on Reader Service Slip.



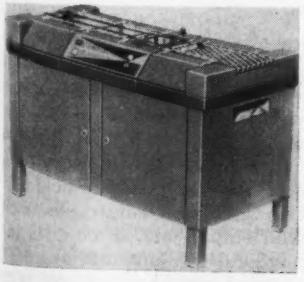
Fast conveyor line marking is result of unit's printing roller revolving on needle bearings, and transfer roller and ink container revolving in bronze bushings. These features also provide less friction, longer life.

Basic arm assembly can accommodate 1, 2½ or 4 inch components interchangeably, simply by replacing original part with larger capacity parts.

Marker can be adjusted by unskilled operator to function from right to left, or left to right.

Versa-Matic conveyor line marker is manufactured by Krengel Mfg. Co., Inc., 227 Fulton St., New York, N.Y.

For more information circle 6737 on Reader Service Slip.



Extremely fast checkweighing — up to more than 6 packages per second, yet spotting one per cent weight variation — is provided by remarkable new unit.

No-stop, constant motion of the equipment makes it possible to handle round, conical, rectangular, oblong or irregu-

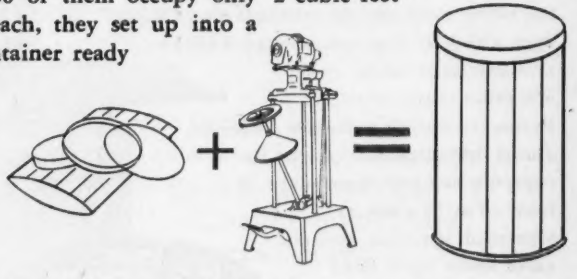
(*Continued on page* 48)

NEW SEALKAN IS *Packageered**

TO HANDLE 10 TIMES EASIER .. FASTER .. AND IS MORE ECONOMICAL TOO

You'll be surprised at the sheer, lazy ease with which you'll handle one . . . . ten . . . . or even 500 "Packageered" Sealkans . . . . you see, 500 of them occupy only 2 cubic feet of space before you use them . . . . in a second flat each, they set up into a husky — leakproof — waste-free — labor-saving bulk container ready for the toughest use and handling.

Today, more than ever, NEW SEALKAN is proving itself the MODERN, flexible method to economically bulk package eggs and dairy solids, dye stuffs, agricultural chemicals, cosmetics, hard goods, drugs, semi-liquids, and perhaps your product too.



*CREATIVE PACKAGE ENGINEERING TO BETTER FIT INDUSTRY'S SHIPPING—HANDLING—STORAGE NEEDS.

We use SEALRIGHT SANITARY SERVICE for Your Protection

Sealright

Sealright-Oswego Falls Corporation, Fulton, N. Y.—Kansas City, Kansas—Sealright Pacific Ltd., Los Angeles, California—Canadian Sealright Co., Ltd., Peterborough, Ontario, Canada.

SEALRIGHT CO., INC., FULTON, N. Y. FP-558

I want to see why Sealkan handles 10 times faster, easier, more economically! Send me your "See Why" Test Sample.

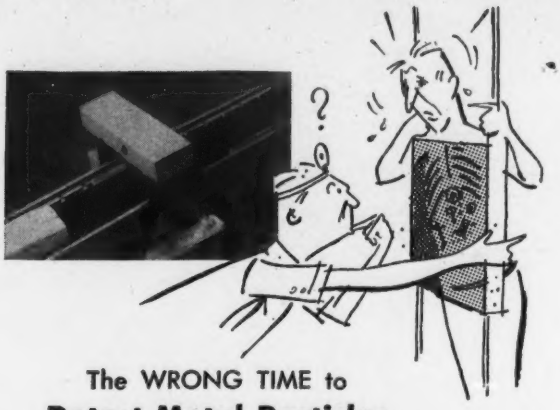
NAME..... TITLE.....

COMPANY.....

ADDRESS.....

CITY..... ZONE..... STATE.....

6738 on Reader Service Slip



The WRONG TIME to

Detect Metal Particles

Unless you use a device that unfailingly detects *all metal* particles *before* your food products leave the process line, your customers (or their doctors) are likely to find them. The dependable solution to this quality-impairing problem is an Allis-Chalmers electronic metal detector. Magnetic or non-magnetic metal particles, no matter how deeply embedded, immediately trigger a warning or reject mechanism when they pass the Allis-Chalmers metal detector.

This device is compact, economical to operate, permits conveyor speeds to 600 fpm, and is easily incorporated into any production setup. Ask your local A-C man for Bulletin 15B7217B, or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

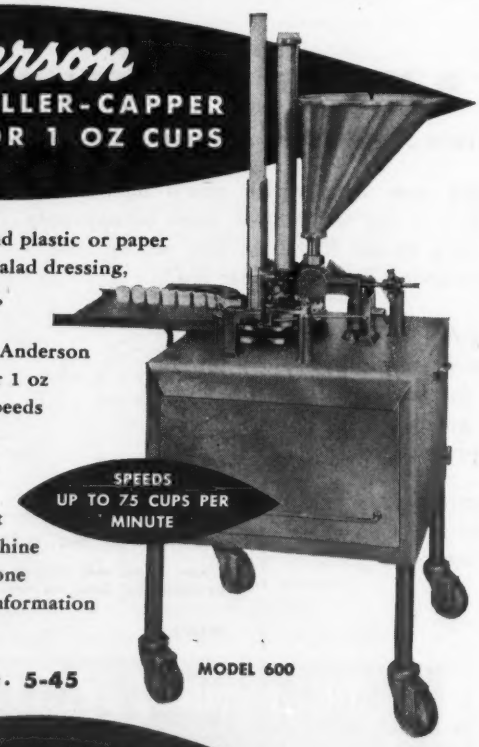
ALLIS-CHALMERS

A-5631

6739 on Reader Service Slip

Anderson

DISPENSER-FILLER-CAPPER FOR ½, ¾ OR 1 OZ CUPS



For filling small nesting round plastic or paper cups with jelly, jam, cream, salad dressing, mustard, tarter sauce, catsup, and other similar products.

In one continuous operation Anderson Model 600 dispenses ½, ¾ or 1 oz cups, fills and caps them at speeds from 36 to 75 a minute.

Operation is simple, smooth, quiet. Every cup is filled accurately, uniformly, without waste. You can clean the machine in minutes and change from one product to another. Get full information on this speedy filler.

Write for Bulletin No. 5-45

Anderson

ANDERSON BROS. MFG. CO.
ROCKFORD, ILLINOIS

6740 on Reader Service Slip

PACKAGING SECTION

Six-line filler unit receives Marshmallow Creme under pressure from vats on upper floor through 6" feed line. Special valves, pistons, cylinders, and operating cams give each jar a true "bottom up" fill and quick drop-away at end of filling cycle

FULLY AUTOMATIC FILLING FOR STICKY, VISCOUS PRODUCT

- ups production almost 60%
- makes labor nearly 5 times as productive
- assures correct net weight to ± ⅛ oz

WARREN SHAPLEIGH, President
Hipolite Company
St. Louis, Mo.

Problem: Marshmallow Creme, the high-quality product of the Hipolite Co., is difficult to handle and fill into jars. It is extremely tender, fluffy, sticky, does not flow well.

Prior to the recent modernization program, empty jars were cleaned by hand, then moved via conveyor to three different filling positions. At each, marshmallow was run into jars through a hand-held flexible hose. Rate of fill was approximately 10 jars/person/min. Total output for the three positions was, therefore, 30 filled containers/min, or 1800/hr.

In addition, because filling method caused product to drop on rim, neck, and side of jar, each jar required individual wiping-off, involving valuable labor time and loss of product.

Personnel requirements under the old method included two girls to hand-clean and feed empty jars, three girls to hand-fill the jars, and five additional girls to wipe off the jars — a total of ten.

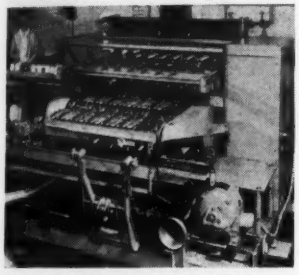
This was for filling operation only — did not include personnel needed for capping, labeling, packing.

Solution: A completely automatic filling-packaging line was built around an automatic, 6-line filling machine. Now, empty jars are removed from cases and mechanically con-

veyed to infeed side of filler. Here they are fed six-at-a-time into a combination air-blast, vacuum-cleaning unit, righted, and moved six abreast under discharge spouts.

At the same time, Marshmallow Creme is pressure-fed from processing vats on floor above into a 6" feed line above filler. This method insures a continuous free flow of product, without air entrapment.

Filler itself features a special manifold hopper chest with adjustable baffle controls for each filling line. Special valves, pistons, cylinders, and operating cams insure a true fill and quick drop-away at end of filling cycle.



Jars enter infeed side of filler six-at-a-time — are inverted, air-blasted, vacuum-cleaned, righted for filling

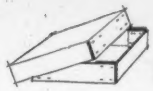
Results: Production was increased from 30 to 72 jars filled/min, or approximately 4320/hr. After nine months of production, the company reports ability to meet increased sales requirements.

In addition, costs have been reduced by using only five rather than the previous ten people. A substantial savings of product formerly wasted because of over-fill or because of deposits on outside of jar contributes to greater present profits. High speed unit fills 8-oz jars to within ⅛ oz, over or under.

Closed, air-pressure control product feed system is joint development of Hipolite Co., 920 N. Sixth St., St. Louis, Mo., and Hope Machine Co., 9400-10 State Rd., Philadelphia 14, Pa.

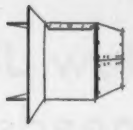
Type 19, 6-line Piston Filling Machine is product of Hope Machine Co., 9400-10 State Rd., Philadelphia 14, Pennsylvania.

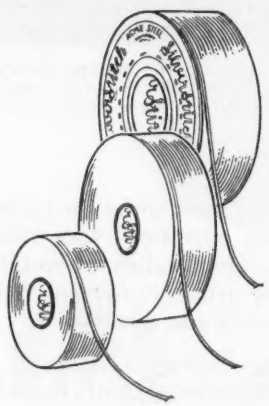
For more information circle 6741 on Reader Service Slip.



CLOSURE IDEA BULLETIN

For users of Fibreboard Boxes





Present closure methods unsatisfactory? Check advantages of wire stitching... mechanically uniform, secure closures, even with unskilled operators...stitches not affected by heat, cold, moisture...secure closure maintained even when box is wet.

Arcuate stitching method means even greater savings...gives stitches greater column strength which means greater driving strength ...allows equally strong stitches from lighter gauge of wire...switching from .020 to .017 gauge saves 12½% on wire costs. Arcuate Folder answers questions about this method.

Wire check points...if it has electro-galvanized, rust resistant finish...close size tolerance and smoothness to protect vital machine parts...is level wound to help eliminate tangles and snags...it's excellent wire. Acme Steel Silverstitch Stitching Wire checks out on all these points.

Stitcher parts orders promptly filled from nationwide network of Acme Steel warehouses and service offices...only genuine Acme Steel replacement parts reflect same high quality and craftsmanship as original parts... can be depended upon to give same long, satisfactory service. AD-154 gives tips on maintenance and repair.

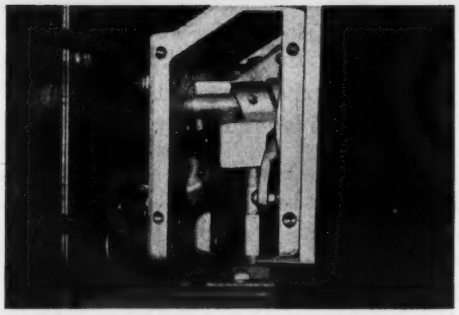
Your Acme Idea Man is available as a consultant on closure problems. His intensive training, backed by Acme Steel Company's 75 years' experience with closure problems, can be of real time and material-saving value to you. Call him now at the nearest Acme Steel Office, or write to Dept. FGW-58, Acme Steel Products Division, Acme Steel Company, Chicago 27, Ill., for information on the complete line of Acme Steel box, book and metal stitchers.

ACME STEEL **WIRE STITCHING**

6742 on Reader Service Slip

New Jamison *Electroglide** Power Door speeds traffic, saves refrigeration *automatically!*

Electroglide offers famous Jamison Cold Storage Door quality and performance plus a completely new design for power operation. Both bi-parting and single leaf Electroglides are available to meet all job requirements.



EXCLUSIVE CAMLOK COMPRESSION SEAL—Jamison Camlok cams doors "in" against frame and "down" against floor at all points.

These other exclusive features mean dependable, smooth operation.

SHOCK ABSORBER CHAIN LINK—reduces wear and tear

SPRING LOADED SUSPENSION—minimizes power requirements

IMPROVED SAFETY EDGE—sensitive full height and full travel of door

SEALED-IN-OIL REDUCTION GEAR—trouble-free operation, minimum maintenance

High volume traffic can now speed on its way in busy cooler and freezer operations with minimum loss of refrigeration. Electroglide is specifically designed to accelerate truck movement with its instant automatic opening and closing.

Rapid smooth opening—Spring suspension helps doors open easily and smoothly. Doors move "out" and "up", riding on level tracks with gaskets clear of sill and frame.

Electroglide is made for both cooler and freezer use. Write today for new Electroglide bulletin to Jamison Cold Storage Door Co., Hagerstown, Md.

*JAMISON TRADEMARK

JAMISON
COLD STORAGE DOORS

6743 on Reader Service Slip

PACKAGING SECTION

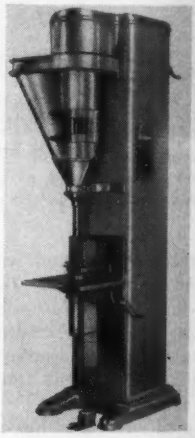
(*Continued from page 45*)

lar package shapes. Sizes handled range up to 10″ wide by 10″ long, with no minimum limit; weight, from 1 oz to 1 lb, or 8 oz to 3 lb.

Compact unit measures only 48″ long by 24″ wide, may be adjusted in height to fit into any in-line conveyor system from 30-42″. Permits several variations in segregating packages. Operates on 110v, single-phase, 60 cycle current, and has built-in voltage regulator to insure accuracy.

Electronic checkweigher is manufactured by FMC Packaging Machinery Div., Food Machinery and Chemical Co., 4900 Summerdale Ave., Philadelphia 24, Pa.

For more information circle 6744 on Reader Service Slip.



Ultra-sanitary filler conforms to all federal, state and city sanitary requirements governing packaging machinery.

All parts contacting product are of special stainless steel, easily removable. Rounded corners and flush interior prevent particles from lodging in recesses. Hopper contains only oil-less bearings.

Versatile machine fills cans, jars, boxes or bags with granules, powder or paste. Four filling methods available.

EG Universal Filler, Sanitary Model, is manufactured by FMC Packaging Machinery Div., Food Machinery and Chemical Corp., 4900 Summerdale Ave., Philadelphia 24, Pennsylvania.

For more information circle 6745 on Reader Service Slip.

PACKAGING SECTION

NEW FILMS

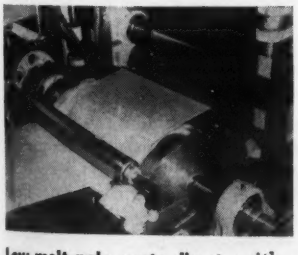
Clear poly overwraps applied on existing automatic "push-through" packaging machinery are made possible by new linear polyethylene.

Film is tough, resists moisture, greases, and gases over wide temperature range without becoming sticky or brittle. Fine clarity is maintained, even when thickness is less than 1/1000". It will be offered at lower cost (by commercial film extruders) than cellophane or Mylar.

Material may be heat-sealed and printed, using conventional methods. USDA approval for food packaging use has been obtained.

Marlex polyethylene is development of Phillips Chemical Co., Bartlesville, Okla.

For more information circle 6746 on Reader Service Slip.



Low-melt poly coats direct, without need for special extrusion-laminating equipment. Converters and coaters need make only slight modifications to conventional melt coating techniques and equipment.

Photo shows new low-melt polyethylene being applied directly to paper, using conventional hot-melt coating machine.

(*Continued on page* 52)

...glamour in glass!

adds impact to in-store display

The foods you sell can show off much better, in beautiful glass by H-A. In crystal flint jars, nappys, or colorfully designed re-use tumblers—H-A uses beauty to pep up the power of package display. That's why H-A packaged foods appeal quicker to the eyes that buy.

HAZEL-ATLAS GLASS division of CONTINENTAL CAN COMPANY

Wheeling, West Virginia

6923 on Reader Service Slip

IT'S COMPAK FOR Cracker Jack

"...the new Hayssen COMPAK fills our every need for accuracy, speed, production and has cut our packaging costs."

"Visit us in Booth 1224, AMA Packaging Show, New York City, May 26-30."

Mr. Don Vater
The Cracker Jack Co.

"COMPAK" will do the same for your packaging. That's the way it's built, that's the way it runs. Forms the package directly from roll stock. Fills the package to exact measure. Packages are hermetically sealed with straight cutoff. Perfect printed design register. Let our experienced packaging engineers help you with your packaging problems. Write us today for further information.

HAYSSEN

MANUFACTURING COMPANY • Dept. FP-5 • SHEBOYGAN, WIS.

first in Automatic Packaging Since 1910

Albany • Atlanta • Chicago • Dallas • Denver • Detroit • Houston • Jackson, Miss. • Kansas City
Los Angeles • Minneapolis • New York • Philadelphia • St. Louis • San Francisco • Montreal • Toronto

6747 on Reader Service Slip

PACKAGING SECTION

High-quality dressings range from thin (French dressing) to thick (sandwich spread), come in 8-, 16-, 32-oz jars. Line is marketed under the Read label, and labels of a number of food chains and private brands

Modernize packaging line to twist-off vacuum cap

Double rate, gain flexibility

Handle 12 dressing types in 3 size jars at speeds to 60 per minute

JACK L. READ
Executive Vice President
J. L. Read Foods, Inc.
and **NORB LEINEN,**
Associate Editor

J. L. Read Foods, Inc., Streator, Ill., and Franklin, Tenn., formerly capped its varied line of dressings at Streator at a maximum rate of 60 per min. Two lines with conventional screwcappers were used — one for French and other thin dressings, the other for viscous products like salad dressing, mayonnaise, Thousand Island dressing, sandwich spread, tartar sauce.

Slow rate of capping was accompanied by lengthy adjustments to accommodate successive runs on containers ranging from 8 to 32 oz, with different neck sizes.

This February, new vacuum cappers were installed on the two lines. Units apply ¼-turn, twist-off lug caps on jars of various sizes and shapes at average combined rate of 120 per min.

Vacuum capping

On both lines, as jars enter steam-filled vacuum chamber, air in headspace is replaced by swirling steam. Caps are immediately dropped and twirled to firm fit by rotary compression belt.

Trapped steam in headspaces condenses as packages leave machine, causing instant vacuum.

Level of vacuum is easily regulated by altering steam flow to capper. Normally, a high-pressure steam boiler of 6 hp capacity and 100 psi working pressure is needed.

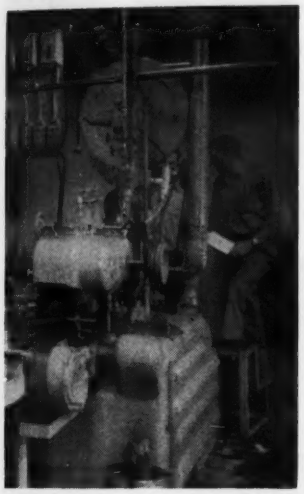
The new capping speed and efficiency enabled Read to install a third line for gallon

packages. Here, "consumer appeal" is a non-existent factor, and screw caps still are applied.

Processing flow

Addition of the vacuum cappers is a big step in Read's continuing program to integrate products of the finest quality and long shelf-life with a modern packaging program.

The salad dressing operation is an example. After starch is premixed in a special mixing room, it is pumped to slurry holding tanks, then continuously cooked by means of Votators.



Vacuum-capping unit can quickly adjust to jar sizes from 1½" to gal, cap sizes from 27 to 83 mm. This type capper has capacity to handle large-mouth jars up to 300/min, small-mouth packages up to 450/min

Next, it is pumped into stainless steel holding tanks on a mixing platform, thence to a premix tank as needed.

At this stage, an automatically metered amount of oil, as well as eggs, and carefully blended and weighed spices are added. Mixture is pumped through a colloid mill, and the resultant emulsion then goes to a second holding tank, and on to filling unit.

Meanwhile, empty jars are loaded onto a power conveyor, carried to an unscrambler, conveyed to a white cap air-jet

(*Continued on next page*)

Now! Vacuum-pack foods in "Scotchpak" Polyester Film!

"SCOTCHPAK" BRAND HEAT-SEALABLE POLYESTER FILM offers advantages such as these to food processors:

"SCOTCHPAK" Film is *tougher!*—it holds a positive vacuum without leakage . . . prevents discoloration of contents. Not a laminate, but an exclusive development of 3M Company research, "SCOTCHPAK" Film resists freezing cold and boiling heat . . . yet can be heat-sealed at 300° to 400°F.—and gives the strongest heat-seal of any packaging film. It blocks out ultra-violet rays adding to the shelf life of any food product.

"SCOTCHPAK" Film is *attractive!* Crystal-clear "SCOTCHPAK" helps food products look their best on the shelf or in the freezer. It remains clear under freezing . . . can be printed if you desire.

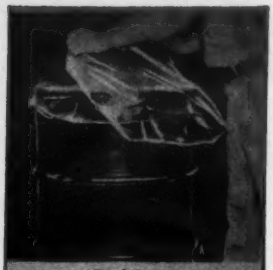
Available in a 2-mil thickness in rolls up to 50 inches wide. For complete facts and figures on packaging food with this dramatic new film development, write 3M Co., St. Paul 6, Minn., Dept. RD-58.

"SCOTCHPAK" is a registered trademark of 3M Co., St. Paul 6, Minn.

REG. U.S. PAT. OFF.
SCOTCHPAK BRAND Polyester Film

MINNESOTA MINING AND MANUFACTURING COMPANY
. . . WHERE RESEARCH IS THE KEY TO TOMORROW
3M COMPANY

6748 on Reader Service Slip



Peel-Over

"All-Chem" Spout*

Carton Liners

(A) Conical-Sleeve Spout
(B) Flat-Sleeve Spout

Manufacturer of the famous "TWIN-SURE" DOUBLE-SEAL Leak-proof Liners

PROTECTIVE'S
SUCCESS!

Tie-Off

The First and The Best

"POWER-SEAL"*

ROUND

PLASTIC LINERS

FOR

DRUMS · CANS · PAILS
and SPECIALTIES
All Diameters · All Heights

SCIENTIFICALLY sealed **POLYETHYLENE**, Mylar, and Copolymer Vinyl—with guaranteed safety.

PERFECTLY made to insert easily and fit exactly all types of ROUND CONTAINERS.

EFFICIENTLY made for top tie-off; for peel-over with separate disc-top -cover; or with spouts, including our special HEAVY DUTY "ALL-CHEM"* LINER for attachment to Rieke Flexspout.

LOGICALLY made to solve "square pegs in round holes" with simplified round-liners to fit ROUND CONTAINERS—ECONOMICALLY.

Write, wire, or 'phone us collect—for information and free samples.

PROTECTIVE PLASTIC PACKAGING PRODUCTS FOR INDUSTRY

PROTECTIVE
LINING CORPORATION

6749 on Reader Service Slip

(*Continued from preceding*)

injection cleaner, th
6-piston filler and to
capper.

After application o
wrap-around labels,
turn to packing statio
tomatic case sealing.

Sequence for Frenc
ing operations is sim
cept that no starch is
and filling is by a 2
vacuum filler.

Efficiencies provide
vacuum-cappers a u
those gained by stra
product-flow layout
carefully scheduled
tion runs. Result h
more Read products
customers, in less ti
with lowered operat
penses.

Vapor-vacuum lug
capping machines ar
ucts of White Cap C
sidiary of Continent
Co., Inc., 1819 N. Maj
Chicago 39, Ill.

For more informatio
6750 on Reader Servi

(*Continued from page 49*)

Material possesses
properties generally
ated with plastic grad
ethylene — including
cal inertness, grease a
ter resistance, great
— yet can be handled
moderate-to-high m
point wax.

"Epolene C" low mel
ethylene is developm
Eastman Chemical P
Inc., subsidiary of E
Kodak Co., 260 Madiso
New York 16, N.Y.

For more informatio
6751 on Reader Servic

We're not mad at anybo

But we may have missed
one or erred in listings s
the Guide to Contract
agers (page 54). If you fi
have, please let us know.
—The

For more information on pr
uct at right, circle 6752 .
see information request bl
opposite last page.

You name it...

STANGE

will season it better!

. . . because with Stange, seasoning is both a science and an art: Science —in processing the basic seasonings: Art—in the application of these seasonings to your products to achieve distinction in their field for flavor and eye-appeal.

STANGE

TALENT TO CREATE

SKILL TO PRODUCE

FLEXIBILITY TO FIT YOUR NEEDS

WM. J. STANGE CO., Chicago 12, Ill. • Paterson 4, N. J. • Oakland 21, Calif.

Canada: Stange-Pemberton, Ltd., Toronto, Ont. • Mexico: Stange-Pesa, S.A. Mexico City

50-A MICROGROUND SPICE • NDGA ANTIOXIDANT

CREAM OF SPICE SOLUBLE SEASONING • GROUND SPICE

PEACOCK BRAND CERTIFIED FOOD COLOR

Printed in U. S. A.

PACKAGING SECTION

KEEP COSTS DOWN

By Not Owning Your Packaging Line

Just ship your processed product to contract packagers in your selling areas. Here are locations, guide to facilities, and types of containers handled

Contract packaging is a way of filling and casing products without investing in packaging facilities and know-how. This method is especially appropriate, even for large processors, when introducing new or re-designed containers, or preparing special sales runs.

As an example, see article on page 40 on how one contract packager has lowered production costs to package foods in pressure-dispensed containers.

The method can also cut costs by reducing transportation charges. Most contract packagers are located near urban areas. Thus a processor can ship in bulk, then package into retail-size containers within his selling area.

Contract packagers in this Guide are classified four ways

- alphabetically,
- by states,
- by packaging lines,
- and by types of containers handled.

In the first list, the firms are numbered, followed by name and complete address. In the remaining classifications, the firms are listed by number only.

Listings are based on informaton sent to FP editors by the individual packagers. Your comments are most welcome. THE EDITORS

BUYERS GUIDE TO CONTRACT PACKAGERS

1. **Aerosol Techniques, Inc.**
111 Silliman Ave.,
Bridgeport, Conn.

2. **Airosol Company, Inc.**
525 N. 11th St.,
Neodesha, Kansas

3. **Allied Professional Associates, Ltd.**
624 Ridge Rd.,
Buffalo 21, N.Y.

4. **American Cellubox Corp.**
27-01 Bridge Plaza North,
Long Island City 1, N.Y.

5. **Associated Brands, Inc.**
50 Wallabout St.,
Brooklyn 11, N.Y.

6. **G. Barr & Co.**
3601 S. Racine Ave.,
Chicago 9, Ill.
850 E. 62nd St.,
Los Angeles, Calif.
4747 Bronx Blvd.,
Bronx, N.Y.

7. **Bernard's Laboratories**
2619 Colerain Ave.,
Cincinnati 14, Ohio

8. **William Bishop Co.**
2449 N. Naomi St.,
Burbank, Calif.

9. **Brockton Contract Packaging**
109 N. Montello St.,
Brockton 17, Mass.

10. **Chemical Enterprises**
1131 W. Devon Ave.,
Chicago 40, Ill.

11. **Chem-Pack, Inc.**
408 Blade Ave.,
Cincinnati 16, Ohio

12. **CrystalX Corp.**
West Lenni Rd.,
Lenni Mills, Pa.

13. **Custom Packaging, Inc.**
136 Tichenor St.,
Newark 5, N.J.

14. **Custom-Pak, Inc.**
5230 Eastern Ave.,
Cincinnati 26, Ohio

15. **Dumont Enterprises, Inc.**
168 S. Van Brunt St.,
Englewood, N.J.

16. **Dyn Corp.**
285 Palisade Ave.,
Cliffside Park, N.J.

17. **Fischer-Wehmann Corp.**
314 Second St.,
Hackensack, N.J.

18. **Fluid Chemical Co., Inc.**
878 Mt. Prospect Ave.,
Newark 4, N.J.

19. **Gabriel Mfg. Co.**
Maple Ave.,
Haverstraw, N.Y.

20. **Gard Industries, Inc.**
1739 Harding Rd.
Northfield, Illinois

21. **General Packaging Co.**
1003 Walnut St.,
Chester, Pa.

22. **R. Hurwich Co.**
2546 Tenth St.,
Berkeley 10, Calif.

23. **Kolar Laboratories, Inc.**
1123 W. Jackson Blvd.,
Chicago 7, Ill.

24. **Leedpak, Inc.**
294 Fifth Ave.,
New York 1, N.Y.
also Mount Joy, Pa.

25. **Liquipak Corp.**
211 Woodworth Ave.,
Alma, Mich.

26. **Andrew M. Martin Co.**
Westerly Rd.,
Ossining, N.Y.

27. **Mercury Heat Sealing Equipment Corp.**
2601 N. Howard St.,
Philadelphia 3, Pa.

28. **Monroe-Danford & Co.**
50-48th St., P.O. Box 807,
Weehawken, N.J.

29. **Package Consultants, Inc.**
1060 Myrtle Ave.,
Brooklyn 6, N.Y.

30. **Packageers Co.**
500 N. Dearborn St.,
Chicago 10, Ill.

31. **Packaging Service Corp.**
7602 S. Greenwood Ave.,
Chicago 19, Ill.

32. **T. J. Paisley Co.**
State Rd.,
Medina, Ohio

33. **Par-Way Custom Packaging**
5136 Firestone Pl.,
South Gate, Calif.

34. **Peterson Filling & Packaging Co.**
Hegeler Lane,
Danville, Ill.

35. **Powr-Pak, Inc.**
643 North Ave.,
Bridgeport, Conn.

36. **Private Brands, Inc.**
1 Pleasant Ave.,
Clifton, N.J.

37. **Puritan Distributing Co., Aerosol Filling Div.**
160 Washington St. North,
Boston 14, Mass.

38. **Smith-McClintock**
520 N. Michigan Ave.,
Chicago 11, Ill.

39. **Specification Packag Engineering Corp.**
6869 Tujunga Ave.,
North Hollywood, Cali

40. **Sun-Lac, Inc.**
274 Lafayette St.,
Newark 5, N.J.

41. **Talmalin Mfg. Co.**
611 Broadway,
New York 12, N.Y.

42. **Henry Thayer Co.**
100 Inman St.,
Cambridge 39, Mass.

43. **Thomasson of Pa., I**
Ford & Washington Sts.
Norristown, Pa.

44. **Tubed Chemicals Co**
2 Pine St.,
Easthampton, Mass.

45. **Unette Corp.**
26 Okner Parkway,
Livingston, N.J.

46. **Unipack Corp.**
314 W. Institute Pl.,
Chicago 10, Ill.

47. **Unit-Packet Corp.**
10 Burlington Ave.,
Wilmington, Mass.

48. **Western Filling Cor**
6423 Bandini Blvd.,
Los Angeles 22, Calif.
also Bridgeport, Conn.

49. **Wilco Co.**
4425 Bandini Blvd.,
Los Angeles 23, Calif.

50. **Zenith Drug Co.**
1 Vesey St.,
Newark, N.J.

CONTRACT PACKAG LISTED BY STATES

California
6 8 22 33 39 48

Connecticut
1 35 48

Illinois
6 10 20 23 30 31 38 46

Kansas
2

Massachusetts
9 37 42 44 47

Michigan
25

New Jersey
13 15 16 17 18 28 36 40 45 50

New York
3 4 5 6 19 24 26 29 41

Ohio
7 11 14 32

Pennsylvania
12 21 24 27 43

(Continued on

Clintock Co.
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Corp.
Ave.,
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Inc.
St.,
J.
Mfg. Co.
N.Y.
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Mass.
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ington Sts.,
Pa.
emicals Corp.
Mass.
orp.
kway,
J.
Corp.
ute Pl.,
l.
et Corp.
Ave.,
Mass.
Filling Corp.
Blvd.,
22, Calif.
rt, Conn.
Blvd.,
3, Calif.
rug Co.

PACKAGERS
TATES

33 39 48 49

23 30 31 34

44 47

17 18 28
50

6 19
41

32

27 43
ontinued on page 58)

A New Star is Born

The WOODMAN ECONO-WEIGH

A table model net weigher

1 ACCURATE . . . up to 1/32 ounce average weight variation!

2 FAST . . . up to 25 fills per minute!

3 SENSIBLY PRICED!

The WOODMAN Company, Inc.

647 EAST COLLEGE AVENUE
DECATUR, GEORGIA

OFFICES IN
PRINCIPAL CITIES

The WOODMAN Company
647 E. College Ave., Decatur, Georgia

Please send bulletins on WOODMAN equipment for packaging efficiency as marked.

Unit Feeders ☐ Net Weighers ☐
Bag and Package Fillers ☐ Heat Sealers ☐ Staplers ☐
Conveyors ☐ Accumulating Tables ☐

Name _____
Company _____
Address _____

6924 on Reader Service Slip.

Pry-off or Twist-off...they ne

Where the look of perfection is the paramount need . . . good packaging strategy calls for the kind of insurance which only Vapor-Vacuum can provide

To move olives and cherries from shelf to shopping cart, there's nothing better than the bright, fresh look of the Vapor-Vacuum protected product.

The sure way to maintain that taste-tempting color, that immaculate air, is to give olives and cherries a Vapor-Vacuum seal. Whatever the time lag, Vapor-Vacuum keeps their sales appeal working full force.

Packer's choice: Twist or Pry

Since the spectacular rise of the ¼-turn Vapor-Vacuum Twist-off Cap, a considerable segment of olive and cherry packaging has gone Twist-off. The Twist-off is a wonderfully convenient, efficient cap for these products.

In much of the field, however, the Vapor-Vacuum Pry-off is still doing its sure, economical job.

Both caps are true Vapor-Vacuum seals. With these caps, there are no leakers, no messy packages, no returns. There's no oxidation, no flavor or color loss. Even after opening, the re-seal keeps on providing effective protection.

Whether it's Twist-off or Pry-off—on olives and cherries Vapor-Vacuum takes care of any production need, any sales situation.

VAPOR-VACUUM®

Seal and Re-Seal

PRODUCT OF WHITE CAP COMPANY

SUBSIDIARY OF CONTINENTAL © CAN COMPANY

need Vapor-Vacuum!
"VAPOR VACUUM" SEALED
TO INSURE FRESHNESS
NEW "Twist-Off" CAP
turn-OFF
NEW "Twist-Off" CAP
There's no service like White Cap Service!
At all levels of planning, engineering, or field service, White Cap cooperation with packers is unmatched—day to day, or for the long pull.

Aluminum Foil Packaging—Flavor Retention

Report No. 15 of a Series by Reynolds Metals Company

FLAVOR is the main quality or characteristic upon which repeat sales of packaged foods or food products depend. A package can look good and provide a maximum of convenience...but it will not be purchased a second time if it did not adequately preserve the flavor of its contents the first time.

A food processor may use the finest ingredients prepared with the most modern equipment under the supervision of the best chefs...but the fine flavor, which is at its peak immediately after preparation, can be lost within a few hours if it is not protected by the proper packaging materials.

Causes of Flavor Loss

Several of the more important causes of flavor loss are:

1. Chemical changes in the food such as oxidation or hydrolysis (both greatly accelerated by light, moisture and air).
2. Absorption of foreign flavors from the packaging material or through it.
3. Direct loss of volatile flavorings through the packaging material.
4. Bacteria and mold.

Aluminum foil provides a powerful means of combating flavor deterioration from such causes. It is opaque, preventing harmful light from catalyzing oxidation or other chemical reactions. It protects against flavor-destroying oxygen and moisture. Aluminum itself is odorless, tasteless and non-toxic. Its low moisture and gas permeability minimize the entry of foreign odors and the escape of volatile flavors. And, in addition, aluminum foil is an effective component for vacuum and gas packaging, both of which retard bacterial changes.

The accompanying three graphs show how aluminum foil helps retain the original flavor of packaged food products subjected to different forms of flavor loss.

Fig. I illustrates the lowering of butter quality due to outside flavor contamination. Grade A butter wrapped in aluminum foil and in parchment was stored at 40°F in a refrigerator with onions, cabbage and garlic. In three days, the parchment-wrapped butter had dropped to a score of 88—cooking grade—while the aluminum-wrapped butter maintained its original 92 score.

Protects Against Rancidity

Fig. II indicates how quickly flavor can be lost through chemical change. Potato chips in aluminum foil bags, wax-glassine bags, double cellophane bags and polyethylene bags were exposed to an RS 275 watt sunlamp four feet away. In less than three days, the potato chips in translucent and transparent packaging had developed a pronounced rancidity whereas the aluminum-packaged potato chips maintained good flavor after thirteen days. These losses were attributed to oxidation, a cause of even more rapid deterioration of certain other foods when they are not protected against light or air.

Loss of a volatile flavor ingredient is shown in Fig. III. Puffed mint candy was stored at 100°F. Candy wrapped in heat-sealed aluminum foil retained "very good" mint flavor after six weeks, while the candy in heat-sealed cellophane had lost nearly all its mint flavor in that time.

Aluminum foil packaging thus assures a maximum of repeat sales by protecting flavor more efficiently than any other flexible packaging material. For further information on this and other phases of aluminum packaging protection, call the nearest Reynolds sales office. Or write to **Reynolds Metals Company,** General Sales Office, Louisville 1, Kentucky

Watch Reynolds All-Family Television Program "DISNEYLAND", ABC-TV.

©1958 by Reynolds Metals Company

FIG. I

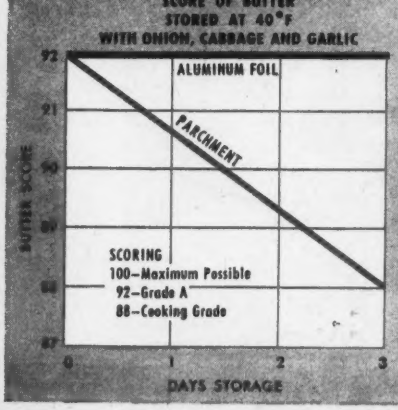


FIG. II

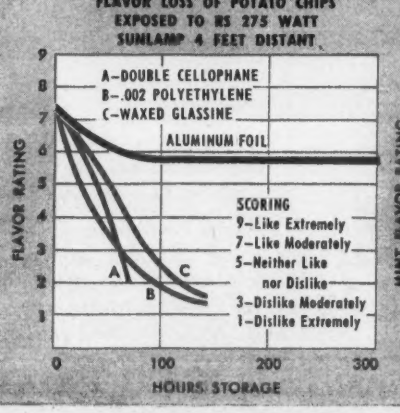
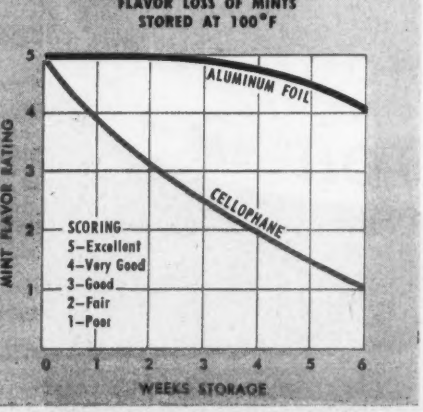


FIG. III



6754 on Reader Service Slip

PACKAGING SECTION

(*Continued from page 55*)

CONTRACT PACKAGERS LISTED BY EQUIPMENT

Pressure Packaging (vacuum, aerosol, etc.)
1 2 3 5 6 18 19 20 23 34 35 37 40 43 48 49 50

Cold Packaging
2 6 26 48

Hot Packaging
22 24 25 48

Packaging Dry or Low-Moisture Products
3 7 8 9 11 14 16 20 21 22 24 30 33 36 39 42 49

CONTRACT PACKAGERS LISTED BY CONTAINERS

All Metal
1 3 6 7 8 11 16 18 19 20 24 30 33 34 35 36 37 38 39 40 43 44 48 49

All paperboard
7 8 11 14 15 16 21 22 24 30 33 36 38 39

Rigid plastic
3 6 7 8 12 14 15 16 21 22 23 24 30 33 34 36 38 39 42 44 49

Metal-end, fiberboard body
7 8 11 13 16 20 21 24 30 33 34 36 38 39 49 50

Squeeze containers
3 5 7 8 13 14 15 16 18 20 21 22 23 24 26 30 33 34 36 38 40 42 44 49

Collapsible tubes
5 7 8 10 11 12 13 16 21 22 23 24 28 30 36 38 39 42 44 45 49

Multiwall bags
7 8 21 27 30 33 38

Metal-end drums
11 16 23 24 30 34 38 39 49

Drums
11 16 23 24 34 38 39 49

Films and foils*
8 9 11 12 13 14 15 16 17 21 22 24 25 26 27 28 29 30 31 32 33 34 36 38 39 41 42 46 47

Bottles and jars (glass, plastic)
3 6 8 13 20 23 24 33 36 42 44 49

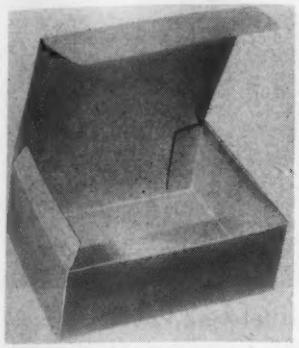
Semi-rigid plastic (acetate)
4

*Some firms equipped to handle laminations

PACKAGING SECTION

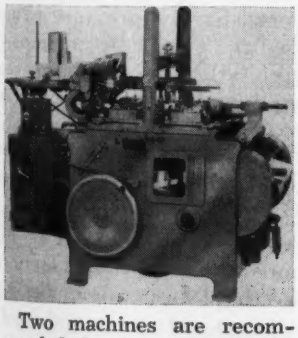
NEW CONTAINERS

Poly-coated glueless cartons provide all the advantages of a polyethylene liner at low cost. Only 1 mil (.001") thickness of polyethylene gives adequate protection against grease and water penetration in packaging frozen foods, bakery products and candy.



Since no adhesive or stay tape is used, the exterior is smooth and flat, providing superior design advantages. Polyethylene lamination will not "peel" from the stock.

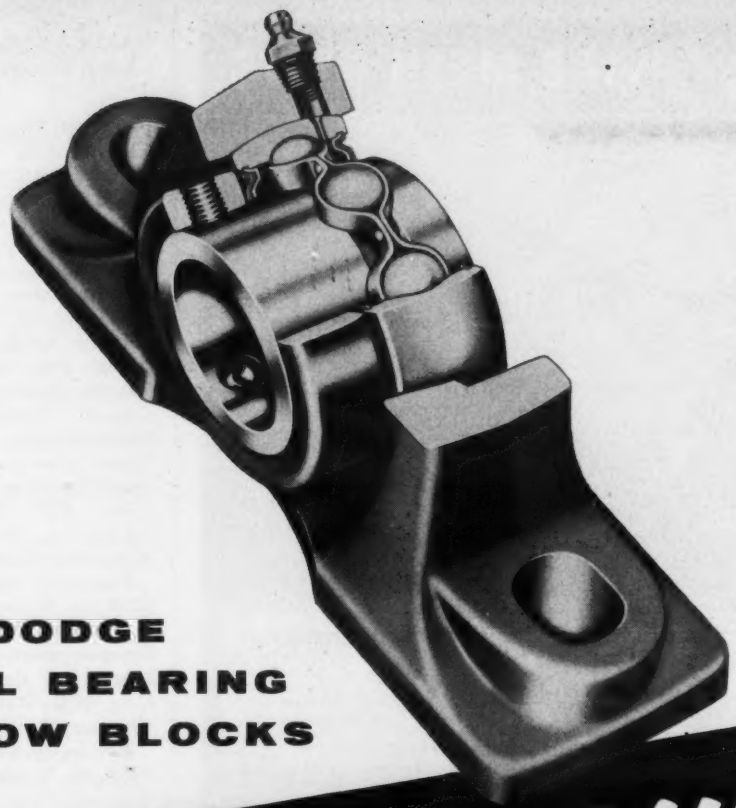
Carton illustrated shows how tabs are heat-sealed on inside of box to form strong, stiff corners. Design appearance is exceptionally clean.



Two machines are recommended for heat-sealing the poly-laminated trays and cartons. One, the modified Thermoplastic "LS" Quad Stayer (illustrated), has top speed of 55 per min, handles tuck lid boxes from 2¼" long, 3⅛" wide and ½" high to 10½" long, 7⅞" wide and 3" high. Same unit accommodates trays from 3" long, 2¼" wide and ½" high to 15" long, 10½" wide and 3" high.

Other machine, Model SGP, operates at speeds to 180 per

(*Continued on next page*)



DODGE
BALL BEARING
PILLOW BLOCKS

PRECISION BUILT
– for normal and medium duty jobs

SC

NORMAL DUTY
SHAFT SIZES — 1/2" to 2-7/16"

SCM

MEDIUM DUTY
SHAFT SIZES — 1-7/16" to 3-1/2"

- ★ High quality at moderate cost.
- ★ Deep groove ball bearing provides high radial and thrust capacity.
- ★ Long inner race distributes load over greater shaft area.
- ★ Metal backed synthetic seals are locked in position. They can't blow. Effectively exclude dust and dirt.
- ★ Completely sealed both on and off the shaft.
- ★ Fully self-aligning.
- ★ Rugged one-piece semisteel outer housing.

Pillow blocks, flange bearings, piloted flange bearings, cylindrical units, hanger bearings, screw conveyor hanger bearings.
Call your local Dodge distributor — or write us for technical bulletin.

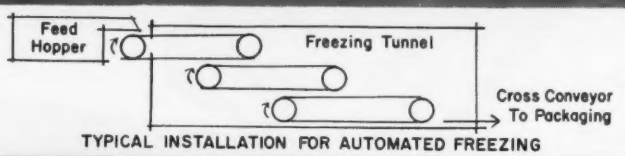
DODGE MANUFACTURING CORPORATION, 2400 Union St., Mishawaka, Ind.

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

DODGE
of Mishawaka, Ind.

6755 on Reader Service Slip

Cambridge WIRE MESH BELTS



TYPICAL INSTALLATION FOR AUTOMATED FREEZING

All-metal belts resist sub-zero temperatures in continuous processing

Continuous freezing on Cambridge Wire Mesh Belts helps maintain capacity production and assures more uniform processing. Open mesh permits free circulation of cold air through belt and around product for fast, uniform freezing. All-metal construction is rustproof, coldproof; cannot absorb odors; a quick spray or steam cleaning maintains sanitary requirements.

In washing, inspecting, baking and cooling operation, too, Cambridge belts cut operating costs and reduce manual handling. Here's why:

CONTINUOUSLY MOVING BELTS ELIMINATE BATCH PROCESSING for faster, more economical production.

OPEN MESH PERMITS FREE DRAINAGE of wash solutions, dirt, grit; allow free heat and air circulation for uniform baking, drying.

ALL-METAL CONSTRUCTION GIVES LONGER SERVICE: there are no seams, lacers or fasteners to break or wear.

SPECIAL ATTACHMENT AVAILABLE; raised edges and cross flights hold product on belt during inclined movement.

Talk to your Cambridge FIELD ENGINEER soon—he'll explain the many advantages of continuous food processing on Cambridge Wire Mesh belts. He'll recommend the belt size, mesh or weave—and the metal or alloy—best suited to your operations. You'll find his name in the classified phone book. Or, write for FREE 130-PAGE REFERENCE MANUAL giving mesh specifications, design information and metallurgical data.

The Cambridge Wire Cloth Co.

WIRE CLOTH | METAL CONVEYOR BELTS | SPECIAL METAL FABRICATIONS

Department H, Cambridge 5, Maryland

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

6756 on Reader Service Slip

PACKAGING SECTION

(*Continued from preceding page*)

min, handles carton or tray blanks from 6 to 18″ long, and 6½ to 19″ wide.

Polyglaze trays and cartons are development of Marathon Corp., subsidiary of American Can Co., Menasha, Wis.

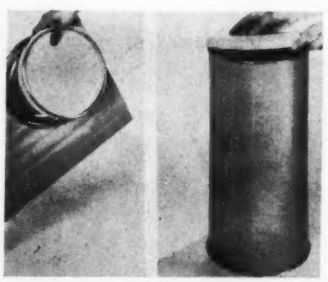
For more information circle 6757 on Reader Service Slip.

Poly Pak carton and tray forming machine, a modification of Kingsbury & Davis Thermoplastic "LS" Quad Stayer, is manufactured by Food Machinery and Chemical Corp., FMC Packaging Machinery Div., Contoocook, New Hampshire.

For more information circle 6758 on Reader Service Slip.

Model SGP carton and tray forming machine is manufactured by Peters Machinery Co., 4700 Ravenswood Ave., Chicago 40, Ill.

For more information circle 6759 on Reader Service Slip.



Safe, low-cost shipper for frozen eggs holds to 45 lb. Container consists of metal base, metal top ring, lid, and paperboard cylinder (left photo). Board has inner coating of Bakelite polyethylene which makes container resistant to moisture penetration. Coating remains flexible even at subfreezing temp.

Containers are shipped flat for in-plant assembly. Automatic assembly equipment available.

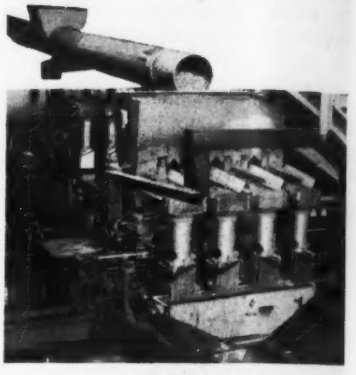
To empty container, processor slashes paperboard with knife.

Enough containers for 45,000 lb of frozen eggs take up same space as preformed containers holding 6720 lb.

Sealkan containers are produced by Sealright Co., Inc., Fulton, N.Y.

For more information circle 6760 on Reader Service Slip.

NEW CONVEYOR for FOOD PACKAGING



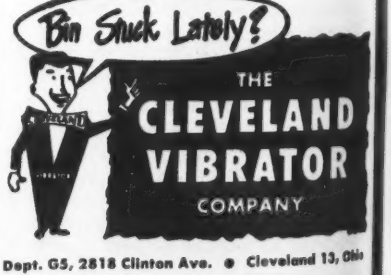
New Cleveland Vibrator Company vibrating conveyor moves a wide variety of food products without breakage, and without spillage.

The 15′ conveyor in the picture above is feeding a packaging machine. This vibrating conveyor is used to transport nuts, macaroni and beans. It will move 5 tons of macaroni an hour, without breaking or damaging the product.

Cleveland Vibrating Conveyors are powered by low pressure compressed air. The gentle and imperceptible vibrating action moves materials rapidly and quietly. These new conveyors are easy to clean, and their tubular shape eliminates accidental spillage or contamination of the product.

Cleveland conveyors can be mounted either by pedestal support or overhead suspension, making installation inexpensive and rapid.

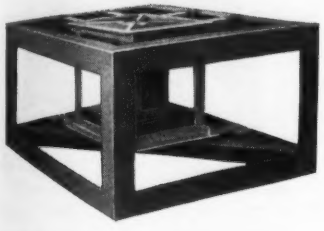
Write today for complete details on these low cost conveyors.



Dept. G5, 2818 Clinton Ave. • Cleveland 13, Ohio

6761 on Reader Service Slip

eccentric loading, side thrusts, pile-ups won't affect the accuracy of THE W-C UNI-FORCE PLATFORM SCALE



No matter where or how the load falls, the Uni-Force Scale will deliver a true measurement of weight. Reason for this remarkable performance is the W-C flexural frame arrangement which resolves platform thrusts into a single component of force applied to the load transducer. Flexure mounting eliminates bearings, knife-edges, pivots and other points of concentrated wear and friction. So dependable is scale operation that W-C guarantees an accuracy of ± 0.25% of calibrated range and a reproducibility of 1 part in 2000.

The Uni-Force Platform Scale is manufactured in a wide selection of standard capacities. It is supplied as a complete, packaged unit which includes either electrical or pneumatic transmission. Because the transmitted signal can be used to actuate a number of devices, the Uni-Force Scale is readily adaptable to such automatic functions as remote indicating, recording, batching, proportioning . . . just about any weight-controlled operation.

For complete information, write for Catalog 12.

W-C

S.A. 1666

WEIGHING and Control COMPONENTS, Inc.

206-G Lincoln Ave., Hatboro, Pa.

6762 on Reader Service Slip

PACKAGING SECTION

NEW ADHESIVES

Adaptable emulsions can be modified in speed of tack, water resistance, compounding characteristics, bond strength, freeze-thaw stability, and heat stability.

After plasticizing, emulsions may be modified for joining paper and wax paper, cellophane, cellulose acetate, aluminum foil, hot drink containers, and wet-strength and greaseproof paper. They can be adapted to high-speed machine packaging.

Materials have major application possibilities in manufacture of milk containers, beverage carrier cartons or frozen food containers, as they are odorless, tasteless, nontoxic, non-staining, resist water, dampness and mold.

Transparent cellulose windows on bags and folding cartons are held firmly in place, as are labels on tin, glass and paper containers.

Packaging adhesives made with the emulsions will not shrink, stretch or wrinkle. Their use also insures against brittleness, discoloration and blocking. Obtainable in a variety of viscosities from thin liquids to heavy pastes.

PVAc Adhesives for food packaging applications are available in custom-formulated tank car quantities from Reichhold Chemicals, Inc., 603 Fifth Ave., New York 20, N.Y.

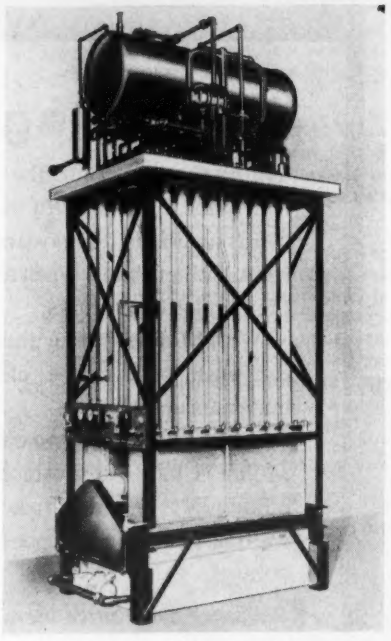
For more information circle 6763 on Reader Service Slip.

Stronger wax laminations are purpose of new, concentrated blend of butyl rubber and microcrystalline wax. Material was developed especially as an additive to microcrystalline wax in coating of heat-seal labels, for lamination of glassine to boxboard, and for lamination of glassine to itself.

Custom-made blend is available upon request.

Reswax Concentrate M-1200 is development of Borden Chemical Co., Coatings and Adhesives Dept., 103 Foster St., Peabody, Mass.

For more information circle 6764 on Reader Service Slip.



Shell-Ice Maker of Size 11—29 tons per 24 hours. Note double rows of tubes.

CLEAR . . . SOLID . . . COLD . . . and with rounded edges

Frick Shell-Ice is the natural preference of poultrymen, fishermen, shippers, ice men, and dairymen.

Frozen and harvested, in a thickness of 1/8" to 1/2", without labor or special cleaning, Shell-Ice will save you time and money. Get the whole Shell-Ice story now: ask for Bulletin 54.

Write to:

DEPENDABLE REFRIGERATION SINCE 1882

FRICK CO.

WAYNESBORO, PENNA., U. S. A.

6765 on Reader Service Slip

Moline link attachments adapt Moline Chains to many jobs

STANDARD ATTACHMENTS
Only a few of the wide variety of Moline Chain attachments are shown here.

Conveying and Elevating

THERE IS NO LIMIT to the number of jobs which can be handled by Moline Chains. With the wide variety of standard link attachments available, the possibilities for adaptation are endless. Both right and left hand types are made to the exact size and pitch of the regular chain links.

With Moline Chain, equipped with standard attachments, you can push, pull, scrape, elevate and carry an endless variety of materials and objects.

At the same time you can cut your overall chain costs because Moline Chains and attachments are engineered for maximum efficiency... trouble-free performance... and long life. Only Moline Chains are triple-tested to guarantee maximum quality control.

Write for descriptive literature today!

Moline MALLEABLE Chains

Specializing in the manufacture of chains

LEADER FOR 60 YEARS

MOLINE MALLEABLE IRON COMPANY
St. Charles, Illinois

6766 on Reader Service Slip

PACKAGING SECTION

Vacuum-packed plastic pouch

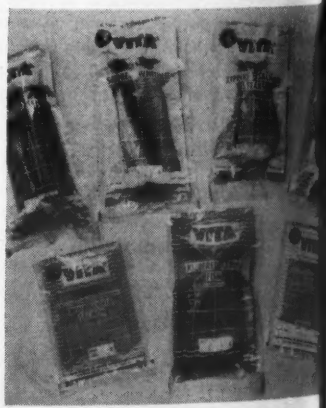
Key to market

AARON GILMAN, Vice President
Vita Food Products Inc.
New York, N. Y.
and **NORB LEINEN,** Associate Editor

Problem: Smoked and kippered fish are available generally only in specialty stores. Usually bulk, they must be prepared for individual orders, require time-consuming, messy slicing and handling.

Storage within store and home demands special, often ineffective, precautions to prevent cross-filtration of odors.

Negative aspects of this situation were recognized by



Four-color, reverse-printed pouches stress brand identification, full product visibility. Individual color coding aids customer identification, simplifies stock handling and re-ordering

expansion, increased sales

- **Locks in flavor**
- **Allows display alongside aroma-sensitive foods**
- **Pre-packaging eases handling**
- **Promotes brand identification**

Vita Food Products Inc. — long established as packers and distributors of whole prepared smoked fish and a complete line of fishery products packed in glass jars.

For the past 60 years, the firm has looked about for a means to "open up the market" — to simultaneously place their quality products in many more buying outlets, and to attract and hold the interest of shoppers.

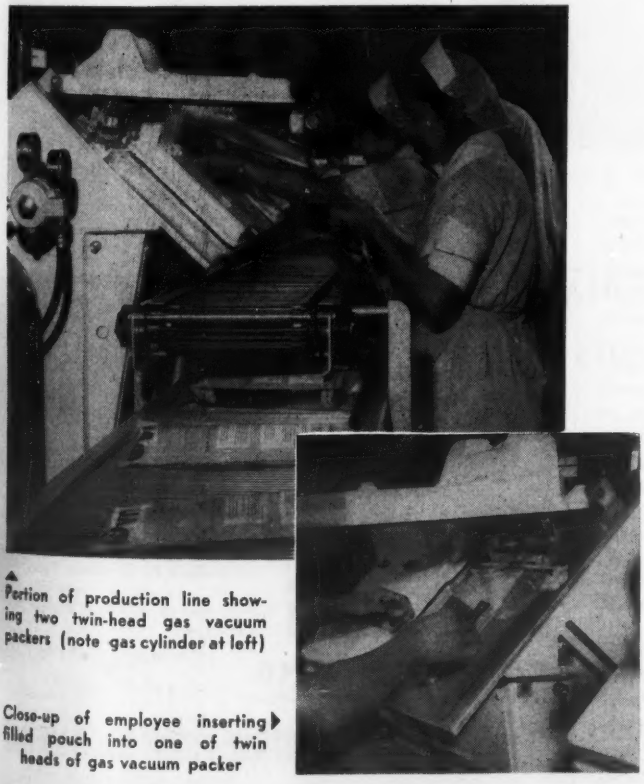
Solution: Pre-packaging was decided upon early in in 1956. Several trial packages of the more popular varieties of smoked fish were tested in New York, Philadelphia, Washington, and Chicago.

Analysis of test results showed favorable consumer reaction, even in critical stores where smoked fish was a relatively unfamiliar item.

However, the early film bags, made from cellophane-polyethylene laminates, required further technical modifications to reduce moisture-vapor transmission and to increase color retention.

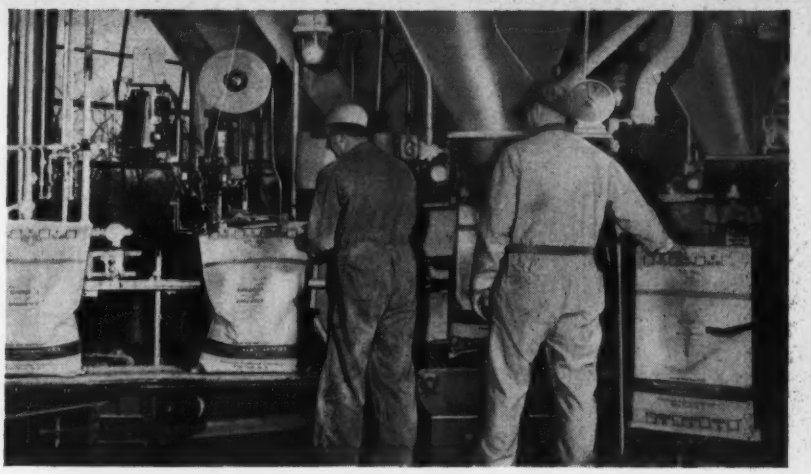
By fall 1957 these difficulties had been overcome

(*Continued on next page*)



▲ Portion of production line showing two twin-head gas vacuum packers (note gas cylinder at left)

Close-up of employee inserting filled pouch into one of twin heads of gas vacuum packer ▶



Richardson recommends

4 WAYS TO SAVE WASTED BAGGING DOLLARS

1. **Minimize Weight Give-Away.** Frequently, you're forced to set mean bagging weights high, to prevent falling short. With an inaccurate scale, you can lose more than $10 an hour through weight variations—especially when bagging at high speeds. Many processors have solved this problem by installing Richardson bagging scales. With average accuracy of ± 1 to 2 oz. or better, they prevent overweights and underweights, year after year.
2. **Spend Less for Bags.** You may be paying good money for nothing but "air space" in filled bags. A Richardson G-73 Impacker can end this waste. The Impacker is a simple, compact accessory that quickly "shakes down" material as it fills bags. Thus, you can pack any given quantity into smaller, neater bags. The money you save—on bag size alone—can bring you profits well beyond the cost of this equipment.
3. **Speed Up Production.** Example: the Duplex Richardson E-50 Bagging Scale can turn out twenty 100-lb. bags per minute. It's only one of many Richardson models for handling flour, sugar, rice, feed, and chemicals, in bagging ranges of 25-250 lbs.
4. **Cut Excessive Labor Costs.** Are your bagging operations overmanned? Some installations require expensive standby labor. You can cut out this cost—sometimes as much as one-third of regular labor costs—and free labor for productive work, by installing *automatic* Richardson bagging equipment. Time and labor-saving accessories include automatic feeders, sewing conveyors and pedestals, bag-holders, as well as packers like the Impacker described above. Low-cost automatic proportioning systems are Richardson specialties, too. Simple design makes maintenance easy. Any maintenance man can understand a Richardson. And, *only* Richardson maintains a nationwide service organization that can serve you *within 24 hours,* if necessary.

Richardson Scales conform to U. S. Weights and Measures H-44 for your protection.

FOR MORE INFORMATION ON RICHARDSON BAGGING SCALES, WRITE TODAY TO

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MATERIALS HANDLING BY WEIGHT SINCE 1902

RICHARDSON SCALE COMPANY • CLIFTON, NEW JERSEY

Sales and Service Branches in Principal Cities

Also manufactured in Europe to U.S. standards

1206

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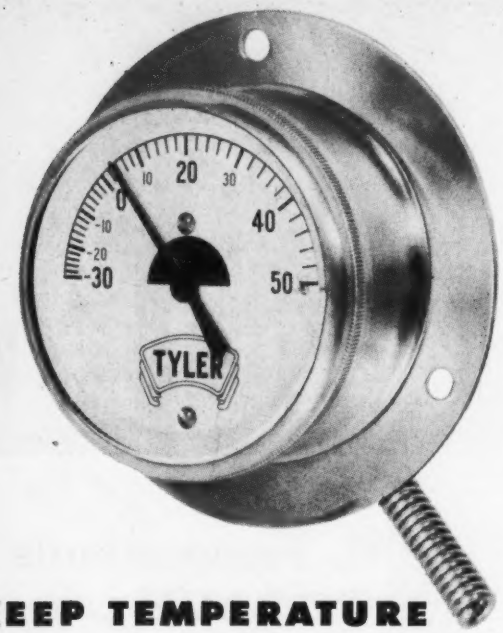

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IN SIGHT

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Auto-Lite, through years of experience in the production of quality instruments, has developed a specialized line of equipment for the indication and recording of temperature to fill individual requirements on any application.

These reliable instruments are widely used in the food and refrigeration industries, on original equipment and in process manufacturing, to safeguard perishables and to maintain quality standards.

Wide selection of dial ranges to meet specific needs.

Choice of many mounting types and case styles.

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PACKAGING SECTION

(*Continued from preceding page*)
through adoption of a laminated cellophane-Saran-polyethylene (450-K-202 with two mills polyethylene) pouch, designed and developed by The Blaine-Thompson Co., Inc., New York City, Vita's advertising agency.

Vita uses 3 bag sizes — 5½ x 8¼", 6 x 8½" and 6 x 11¼" — for its vacuum-packed line. The 2 larger size bags have a 3/16" lip on bottom. Products include sliced smoked salmon (lox), sliced Nova Scotia salmon, kippered salmon steaks, kippered sable fish (black cod), smoked whitefish, smoked lake chubs, smoked whiting, and smoked eels. Two new smoked items — butterfish, and mackerel — were added recently.

These vacuum-packed items are processed in Vita's Brooklyn, N. Y. plant on an 8-head "6-10" vacuum packer and two twin-head gas vacuum packers. In-plant conveyor system is all stainless steel.

Results: Sales have increased several-fold. Groceries and supermarkets can now stock pre-packaged smoked fish in their regular refrigerated cabinets, without transfer of odor to adjacent foods, and without quick spoilage.

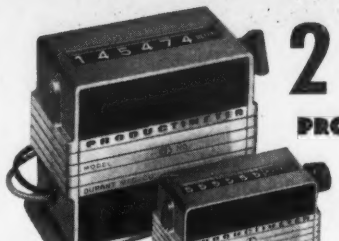
Thus, the line no longer is restricted to delicatessens and appetizing outlets. Related item sales, once bonus sales for appetizing stores, are a profit incentive.

Pre-packaging in convenient weight units eliminates most handling, allows self-service after the see-through pouch has attracted customer's attention.

Consumers now satisfy their individual smorgasboard, party, or meal-time needs in the store while doing their normal food shopping. Recipes and serving hints imprinted on back of each pouch suggest party and meal-time preparations for regular smoked fish users, help introduce unfamiliar items to new customers.

Vita confidence in the future of prepackaged smoked fish has resulted in their installing a complete pre-pack line and operation at their Philadelphia plant.

(*Continued on page 66*)



2 ELECTRIC PRODUCTIMETERS

"CS" and "Y" ELECTRIC PRODUCTIMETERS
The answer to all electric counting requirements

Two Companion Counters . . . Two Sizes . . . Hi-Speed . . . Accurate . . . Long Life . . . Totally Enclosed

Speeds of 1000 counts per minute. Both counters give maximum readability. Design fits all mounting conditions . . . panel mounting or base mounting. Hardened steel working parts for long life and dependability.

New type case for compactness, rigidity, and protection against dust and moisture conditions. Operate accurately over wide current fluctuations.

DURANT MANUFACTURING CO.
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Representatives in Principal Cities

Send for Catalog No. 55

PRODUCTIMETERS SINCE 1879 *Count Everything*

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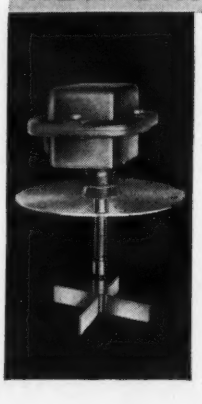
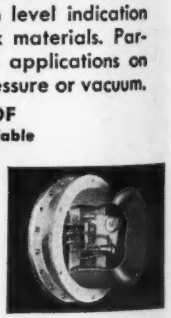
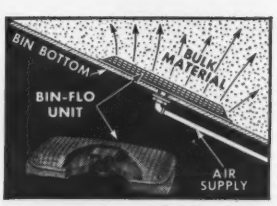
NEW BIN LEVEL INDICATOR



New ROTO-BIN-DICATOR®
Motor driven paddle-type bin level indicator
For automatic bin level indication or control of bulk materials. Particularly suited to applications on bins subject to pressure or vacuum.
EXPLOSION-PROOF
U. L. listed units available

BIN-DICATOR®
The original diaphragm-type bin level indicator. In successful use for 20 years.





BIN-FLO®
Assures gravity flow of pulverized materials
Bin-Flo Aerator units in bins, chutes, etc., use small volume, low pressure air to restore flow to dry, pulverized materials which tend to pack and bridge in storage.

THE BIN-DICATOR CO.
13946-C Kercheval • Detroit 15, Mich.
Write for detailed Literature or call
VAlley 2-6952

WE SELL DIRECT • PHONE ORDERS COLLECT

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Packaging Foundation director

Henry G. Walter, former steel executive, has been named executive director of Michigan State University's Packaging Foundation, Inc.

Mr. Walter retired as president of the Gerrard Steel Strapping Div. of U.S. Steel on Jan. 1.

High altitude food container

A high altitude food container to hold liquid type foods for pilots flying at high altitudes has been developed by American Can Co.

Face masks on pressure suits limit food intake to products that can be taken through plastic straws.

Pressure differences inside and outside suits make sucking through straw impossible.

Therefore, new container (a collapsible metal tube) can be squeezed by hand to force food through the straw.

For more information on product at right, circle 6770 see information request blank opposite last page.

Many users of the fine Hamilton 401 Duplex Slitter shown above have found that the savings they realized from its use easily justified the replacement of other types of slitters even though only a few years old.

Lithogauging with Hamilton No. 401 Duplex Slitter is the most precise in industry today

Hamilton's new No. 401 Duplex Slitter represents the very latest in advanced engineering. Its many features include new cutters that last 50% longer between grinding and new safety and antijamming features that all add up to faster production, fewer rejects, and reduced downtime and maintenance costs.

And this precision machine *exactly* duplicates litho press gauging. In fact, no other types of slitters available are as accurate and dependable.

Write today for descriptive literature on the world's most complete line of can making machinery—including details of the moneysaving No. 401 Duplex Slitter—to Dept. 11E.

Hamilton Division Hamilton, Ohio

BALDWIN · LIMA · HAMILTON

Diesel engines • Mechanical and hydraulic presses • Can making machinery • Machine tools & general machinery

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TORULA YEAST

U.S.P.

PRIMARY GROWN

high-protein yeast

In the grade to meet your specific nutritional and pharmaceutical requirements

LAKE STATES
...America's Pioneer Producer of TORULA (U.S.P.)

LAKE STATES invites you to consider the many advantages of dried torula yeast, U.S.P. as a protein supplement, rich in amino acids, vitamin B complex and minerals.

Grown in sterile media, it is carefully controlled for uniformity and is bland, pleasant tasting for easier blending. LAKE STATES has longer shelf life and is economical.

For Complete Information and Samples write to

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or
Charles Bowman and Company
220 E. 42nd St., New York 17, N.Y.

600 S. Michigan Avenue
Chicago 5, Illinois
170 E. California Street
Pasadena 1, California

Lake States

Lake States Yeast Corporation • Rhinelander, Wisconsin

Subsidiary of Rhinelander Paper Company

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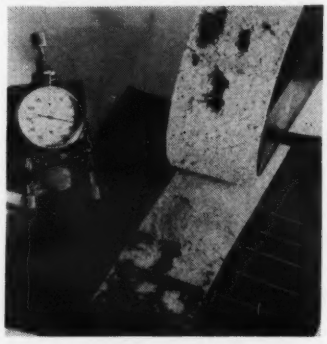
PACKAGING SECTION

(*Continued from page 64*)

Twin-head and 8-head gas vacuum packers as well as special flexible packets are products of Standard Packaging Corp., Clifton, N. J.

For more information circle 6772 on Reader Service Slip.

NEW ADHESIVES



Quick bond for solid surfaces is advantage of new line of polyvinyl resin adhesives. Line includes carrying carton adhesives, case sealers, straight line and right-angle adhesives, tube winding products, foil over-wrap adhesives, greaseproof coating, kraft bag seam pastes, label adhesives.

In addition, the adhesives can be modified to fit exceptional requirements. They have been used successfully on all leading gluing machines.

Photo shows how one type, a carton-sealing adhesive, produces so strong a bond in 17 seconds that the material tears completely while bond holds.

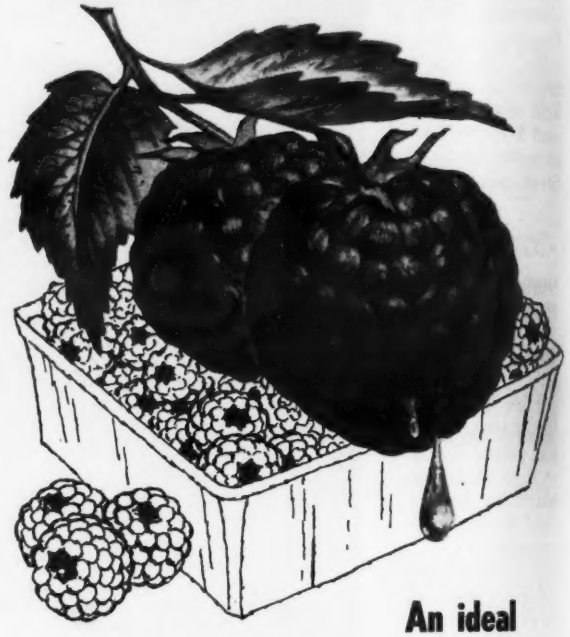
Materials will bond impervious surfaces, have controlled penetration, proper tack range, excellent water resistance. They are odorless, free from mold development, nonstringing, and prevent excessive foaming in glue pot or excessive glue pot build-up.

"Seban" line of adhesives, available in 5, 15, 30 and 55 gal containers, is development of Armour and Co., Adhesive Div., 1355 W. 31st St., Chicago 9, Illinois.

For more information circle 6773 on Reader Service Slip.

For that "just-picked" real fruit flavor

FRIES & FRIES RASPBERRY



An ideal imitation flavoring for cakes, cookies, candies, and soft drinks

The Fries and Fries laboratories specialize in creating flavors to meet your specific needs.

Contact us and let us show you why our fine flavorings are used in leading products found on every supermarket shelf.

MANUFACTURING CHEMISTS
FRIES & FRIES INC
CINCINNATI U.S.A.

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CINCINNATI .....110 E. 70TH STREET

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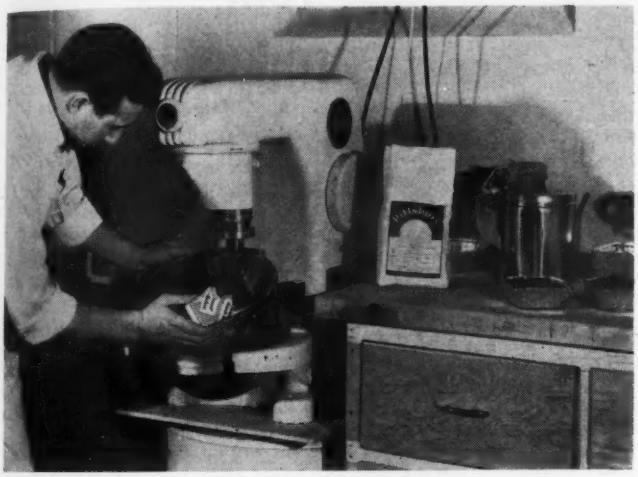
PREPARED DRY MIXES SUPERIOR

. . . to baker's own wet formulas



Prepared mixes require bakers to clean and handle less equipment and storage containers

A University Report

Savings of 1.38 to 9.17% in fixed costs are possible by using dry mixes instead of their wet counterpart. Other possible savings are:

Decreased amount of storage space.

More purchases of ingredients in carload lots rather than the more expensive less than carload lot prices.

Better inventory control, which in turn prevents spoilage and insect infestation of ingredients.

These facts were brought out in recently announced results from a comparative evaluation project at Department of Baking Science and Management, Florida State University.

Baked products were made from the following Pillsbury Mills' mixes: Special Sweet Doh mix, Clairmont Sweet Doh mixes, Superaise Yeast-raised Donut mix, and their wet mix counterparts.

Mixes were studied from standpoint of processing methods, sanitation control, and finished product shelf life and consumer acceptance.

Less ingredient loss

There is less spillage onto baker's uniforms, floors, and equipment with use of prepared mixes. There is less handling and cleaning of containers. There is also reduction of moving and storing partially filled containers.

These factors, in addition to lowering ingredient costs, lowered costs of keeping overall operations sanitary.

Results from consumer evaluations showed quality of products made from dry mixes to be superior to that of their wet mix counterparts. This superiority included taste, flavor, eye appeal, and the internal and external characteristics of the products.

Evidently, some factor in

(*Continued on next page*)

TO MEET THE DEMAND FOR

high protein

INVESTIGATE

Kesco VITAL WHEAT Gluten

80 PER CENT PROTEIN

A KEESTAR PRODUCT

THE EMPHASIS TODAY is on more protein. Are you as conscious of this trend as consumers?

KESCO VITAL WHEAT GLUTEN is being used as a protein supplement by many food processors, including the baking, cereal, macaroni and health food industries for improving established products and developing new products.

KESCO VITAL WHEAT GLUTEN is guaranteed 80 per cent protein. Due to this high concentration, a little goes a long way. Investigate how **KESCO VITAL WHEAT GLUTEN** can help you.

***SEND FOR SAMPLES,** analysis and further information.*

THE KEEVER STARCH COMPANY

COLUMBUS 15, OHIO

Processors of Grain Products for Industry Since 1898

6775 on Reader Service Slip

(*Continued from preceding page*)

ingredients or process increases shelf life for dry mix products.

Taste panel scores indicated increased preference for dry mix products 24 hr after baking. No physical measurements were made of the staling rate, but difference in freshness was definitely noticed by panel members.

The project report concludes that "well formulated dry mixes produce a uniform, high quality of finished product . . . For the baker who is short on experienced labor, use of dry mixes . . . may well answer many of his production and cost problems."

Project was conducted by J. E. Beaver, Richard Blackwell, and G. C. Newton, and supervised by the Florida State University Service Bakery Manager, C. D. Stone.

Booklet, 20 pgs, summarizing Service Project Grant #317 is available from Pillsbury Mills, Inc., Minneapolis 2, Minnesota.

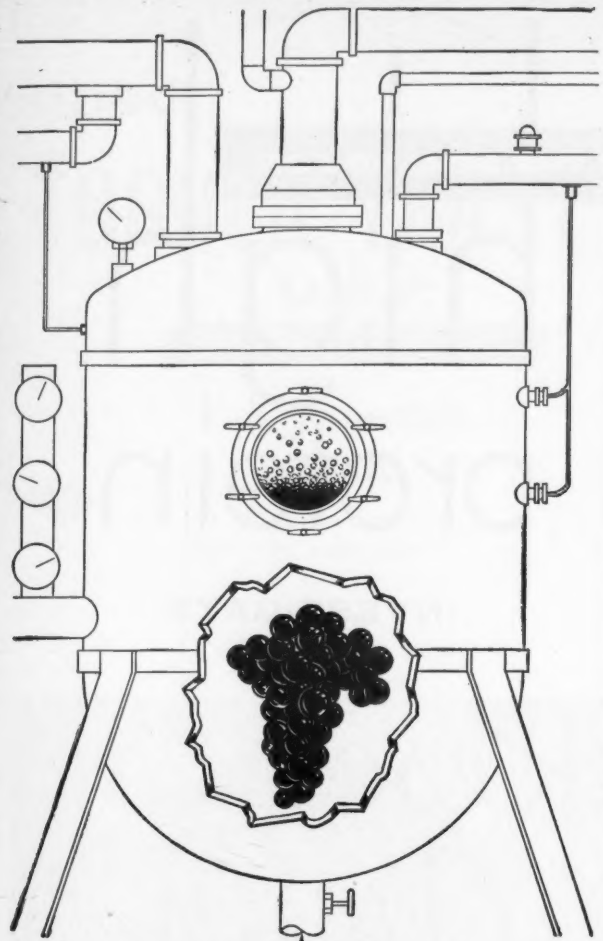
For your copy simply circle 6777 on Reader Service Slip.

Sets up panel to taste various sugar blends

Photo shows recently established facilities and portion of panel to taste-test various liquid blends of sucrose and dextrose. These sugars are tested in beverages for flavor, body, sweetness, and general "appeal". For cakes, tests are made for crumb and crust texture, and freshness. The panel also determines amounts of sugar required for new food products.

Sugar taste panel has been set up at Refined Syrups & Sugars, Inc., Yonkers, N. Y.

For more information circle 6778 on Reader Service Slip.



Real Fruit Flavors...

WITH THE FUGITIVE AROMAS *CAPTURED!*

You can improve your product amazingly—by use of FLAVOREX *real fruit flavors*. Our "Low Temp" process coaxes out and captures the very last drop of goodness in the natural fruit. Those delicately elusive, but important, volatiles now are collected and entrapped in our real fruit concentrates . . . so that all the full, rich, good taste goes directly into your product. Available—black raspberry, black cherry, grape, strawberry, blackberry, punch, lemon and orange—as real fruit pure concentrated juices. Or with other natural flavors for added strength. Write for samples and prices today.

Better Flavors for Better Products

FLAVOREX CO., INC.

302 S. CENTRAL AVE., BALTIMORE 2, MD.

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If it goes into your product

BE SURE IT'S PURE!

In a recent release of U.S. Government standards, Irish Moss Extracts and Sodium Alginates have received approval as ingredients in certain dairy products.

You can turn this information to your own advantage at once — whether you are in the dairy field or not.

For, in many a problem dealing with viscosity, suspension, stabilization or gelation, food processors who have **tested** these products of the Algin Corporation of America have found an ideal solution.

These extracts are **truly** odorless and tasteless. They add virtually no calories to the finished food products. They are impressively economical. But above all — they are uncompromisingly **pure.** In fact, Algin Corporation's exclusive method of extraction guarantees the **highest** purity for these Marine Plant Extracts.

Complete **factual** information is yours for the asking: Actual Case Histories of how these Marine Plant Extracts improve products and sales; solid evidence that these extracts may well be the basis of entirely **new** products for you. Simply address your request to: —

Dept. P5

ALGIN CORPORATION OF AMERICA

SALES OFFICES: **NEW YORK 4:** 24 State Street • Whitehall 4-1193
CHICAGO 5: 600 South Michigan Ave. • WA 2-3829
LOS ANGELES 25: 2024 Westgate Ave. • BR 2-4346

Canadian Sales Representative — Charles Albert Smith Ltd.
356 Eastern Ave., Toronto • 8307 Royden Rd., Montreal

6779 on Reader Service Slip

Pizza flavor for snacks — just dust it on

Pizza pie flavor was developed for use in snack foods such as potato chips, crackers, pretzels, cocktail sticks, and puffs. Provides familiar taste of this Italian "delicacy".

Produced as a sealed-in dry flavoring, which can be dusted on the finished food product, mixed directly in dough, or incorporated in cheese coatings.

Sealva Pizza pie flavor is a development of van Amerigen-Haebler, Inc., 417 Rosehill Pl., Elizabeth 2, N.J.

For more information circle 6780 on Reader Service Slip.

Is there a difference in invert sugars?

In the March, 1958, issue of *The Manufacturing Confectioner,* an article written by Clifford Clay implies that acid-converted invert sugar is nutritionally harmful, whereas enzyme-converted invert has some nutritional "plus" value.

In the opinion of Sugar Research Foundation, there is no significant difference between the two sugars, assuming that reasonable care has been taken during processing to invert.

"The two products are not necessarily identical," stated Dr. H. B. Hass, president of the Foundation. "Acid-converted invert typically contains traces of hydroxymethylfurfural, while the enzyme-converted product often contains polysaccharides synthesized by the enzyme.

"With careful procedure, neither of these contaminants is present to an important extent," concluded Dr. Hass.

Derive antioxidant from Douglas fir tree bark

Antioxidant for edible oils is being produced from bark of Douglas fir trees. Known as quercetin, this additive will help prevent product spoilage caused by exposure to ultraviolet light.

(*Continued on next page*)

HOW YOU CAN MAKE THEM SAY "HOT DOG!"

When it's barbecue time anywhere it's time for the whole family to enjoy an old American favorite—hot dogs. And father, mother, and kids will all want more when your frankfurters are flavor-enhanced with Huron* MSG, the monosodium glutamate derived from wheat. MSG not only helps bring out the delicious flavor but also locks it in so your franks will always have that "just made" taste.

Most meat products, frosted foods, soups, and canned foods are more flavorful with MSG. With no flavor of its own, MSG bolsters the characteristic savor of each ingredient, making the whole a more tempting dish. For complete technical information on MSG and other Hercules products for the food industry, write:

**Hercules Trademark*

HURON* **MSG** HURON MILLING DIVISION

VH58-4

Virginia Cellulose Department **HERCULES POWDER COMPANY** INCORPORATED *Wilmington 99, Delaware*

MANUFACTURERS OF AGE-IT® AND HVP®; WHEAT GLUTEN AND WHEAT STARCH

6781 on Reader Service Slip

IN BREAD

Assures complete, controlled fermentation, enhances flavor and aroma, gives even texture, uniform grain, maximum retention of softness, longer shelf life.

IN CATSUP

Preserves piquant tomato flavor, enhances delicate spice flavors, protects the rich red color of all tomato products.

IN FROZEN DESSERTS

Assures firmer, finer-grained ice cream, with rich butterfat flavor—prevents surface crusting and preserves true fruit flavor in sherbets and water ices.

IN CANNED FRUITS

Enhances true fruit flavor, protects natural color, stabilizes the good eating qualities of fruits—adds appetite and sales appeal.

CERELOSE

BRAND DEXTROSE

For technical assistance in developing improved food processing formulations, contact our nearest sales office or write:

CORN PRODUCTS SALES COMPANY, 17 BATTERY PLACE, NEW YORK 4, NEW YORK

6782 on Reader Service Slip

ingredients

(*Continued from preceding page*)

Quercetin occurs as a natural substance in many foods and plants consumed by humans and animals. It has been produced from imported raw materials. Now a process has been developed to extract the substance from bark.

Quercetin is being processed in pilot plant quantities by Central Development Dept., Weyerhaeuser Timber Co., Longview, Wash.

For more information circle 6783 on Reader Service Slip.

Sodium caseinate

Sodium caseinate is being produced by another processor. It is a tasteless, odorless product, containing 90% protein.

Recommended as nutritional additive for cereals, sausages, diabetic desserts, flour, and senior foods, it can also improve processing operations of such products as wines and doughnuts.

Sodium Caseinate (Heart of the Milk) is available from Land O'Lakes Creameries, Inc., 2213 N.E. Kennedy, Minneapolis, Minn.

For more information circle 6784 on Reader Service Slip.

"NO, IT'S NOT LEAKING OIL... JUST CHOCOLATE RIPPLE AND PEACH"

For more information on product at right, circle 6785 . . . see information request blank opposite last page.

highest standard in the WORLD for over 100 YEARS

ATLAS CERTIFIED COLORS

FIRST PRODUCERS OF CERTIFIED COLORS

H. KOHNSTAMM & COMPANY Inc.

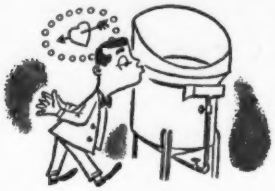
ESTABLISHED 1851

89 PARK PLACE, NEW YORK 7 · 11-13 E. ILLINOIS ST. CHICAGO 11 · 2632 E. 54 ST., HUNTINGTON PK., CALIF.

BRANCHES IN OTHER PRINCIPAL CITIES OF THE U.S.A. AND THROUGHOUT THE WORLD

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.



"Lixator" Improvements Make Brine Production More Efficient

Widely used throughout industry, Lixators are automatic rock-salt dissolvers developed exclusively by International Salt Company. They produce high-quality, fully saturated, self-filtered brine . . . and virtually eliminate the work and expense of storing, handling and using dry salt.

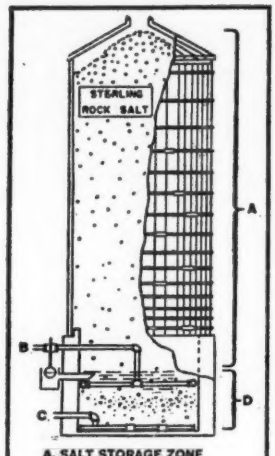
Excellent as this brine-making equipment is, International is constantly working to *improve* Lixator designs. From time to time, we also introduce special new Lixator attachments. Here are some improvements and attachments that can make production of Lixate brine more efficient and economical in your plant.

Low liquid level—a basic design feature that provides great savings by eliminating the need for deep salt-dissolving tanks. For example, it is possible to convert an old silo, dry-salt storage bin or unused room into a first-rate Storage or Silo Lixator simply by making the lowest portion into a waterproof salt-dissolving and brine-storage tank. The upper portion need *not* be waterproofed or made brine-tight.

A common method of waterproofing is to line the floor and bottom portion of the walls with concrete. Lixate brine is made in this lower tank portion, with dry salt occupying the space above the liquid level.

Electrode controls. To regulate the liquid level in a Lixator, electrode controls are often used. This is an excellent alternative to the standard float controls in many Lixator installations.

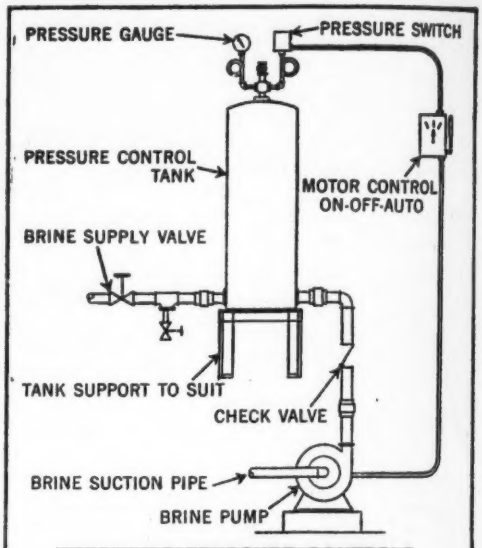
Two electrodes of different length are protected in a length of pipe, then immersed in the Lixator. Whenever the liquid level falls below the lower electrode, the electric circuit is broken, a relay opens to close a load contact, and the water valve is opened. When the liquid level rises to the higher electrode, the circuit is closed, and the relay closes to shut the valve. In this way the brine level is maintained between the desired limits in the Lixator—continuously and automatically.



A. SALT STORAGE ZONE
B. WATER INLET
C. BRINE OUTLET
D. SALT DISSOLUTION AND FILTRATION ZONE

LOW LIQUID LEVEL

In this Silo Lixator, only the bottom portion is brine-tight



AUTOMATIC PRESSURE CONTROLS FOR LIXATE BRINE PUMPING SYSTEM

Pressure controls . . . for brine systems. International has introduced the technique of automatically starting and stopping Lixate brine pumps by pressure switches. If a valve is opened anywhere in the brine distribution piping, brine flows and brine line pressure drops slightly. This, in turn, activates a switch, starting the pump, which withdraws brine from the Lixator. Everything is automatic. The operator only opens and closes a brine valve at the point of use.

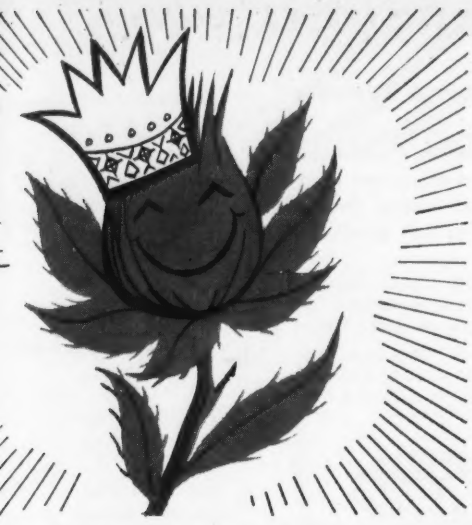
Introduction of brine-metering devices. In cooperation with leading meter manufacturers, International has pioneered in the application of highly accurate and specialized meters for brine. Among the advantages of using these meters with Lixators is precise *salt* measurement, since every gallon of Lixate brine contains exactly 2.65 lbs. of salt. Also, automatic shut-off metering devices allow you to preset the amount of brine you want. Flow will stop when this amount has been measured out.

In many other ways, brine meters and other Lixator attachments can boost brine-making and brine-using efficiency. To find out how you can benefit from such devices, contact International. One of our experienced sales engineers will gladly explain about brine-density and brine-flow regulators, piping layouts, continuous brine-dilution devices, etc. He can also recommend the type and size of Sterling Salt best suited to your needs.

INTERNATIONAL SALT CO., SCRANTON, PA.
Sales Offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa.; Pittsburgh, Pa.; Memphis, Tenn.; and Richmond, Va.

Service and research are the extras in **STERLING SALT**
PRODUCT OF INTERNATIONAL SALT COMPANY, INC.

6786 on Reader Service Slip



e's a NEW Oil for Food Processing . . .

94%

NSATURATED
AFFLOWER OIL

w can you improve your product with lower Oil?

★ Safflower Oil contains the highest percentage of essential fatty acids (73% linoleic) of *any* commercially available vegetable oil.

★ Bland, palatable, odorless, stable . . . can be used in place of any other high quality vegetable oil in food processing.

★ Your customers are vitally interested in the relationship of essential fatty acids to health.

★ Safflower Oil is readily available *now.*

★ Safflower Oil is stable in price, reducing fluctuation in product cost.

Find out now how Safflower Oil can improve your product for the future. Write for samples and information.

PACIFIC VEGETABLE OIL CORP.

RESEARCH AND DEVELOPMENT DEPT.
PACIFIC VEGETABLE OIL CORP.
62 Townsend Street
San Francisco, California

6787 on Reader Service Slip

Wall chart shows use of isoascorbate tablets for meat products

Wall chart (8½ x 11") designates recommended levels for using sodium isoascorbate in the form of effervescent tablets for the following meat products: frankfurters, sausages, corned beef, ham, bacon, and packaged comminuted meat. Also has information on MIB labelling, and suggested smoking and cooking temperatures.

Takatabs wall chart is available from Takamine Laboratory Div. of Miles Laboratories, Inc., Clifton, N. J.

For your copy simply circle 6788 on Reader Service Slip.

Cake depanning compound releases product quickly without damage

New, ready-to-use releasing agent may also be used for baked goods other than cakes. Offers immediate release without crippling of finished product or carbonization of pans. No off-odor imparted to baked goods. Easily applied by hand, and requires minimum storage space.

Product is packaged in 40-lb pails for retail bakers, and on-premise bakeries in hotels, restaurants, hospitals, and other institutions.

Cakeze cake depanning compound is product of Max Ams Co., 601 E. Gen. Robinson St., Pittsburgh 12, Pa.

For more information circle 6789 on Reader Service Slip.

Yellow color from beta carotene

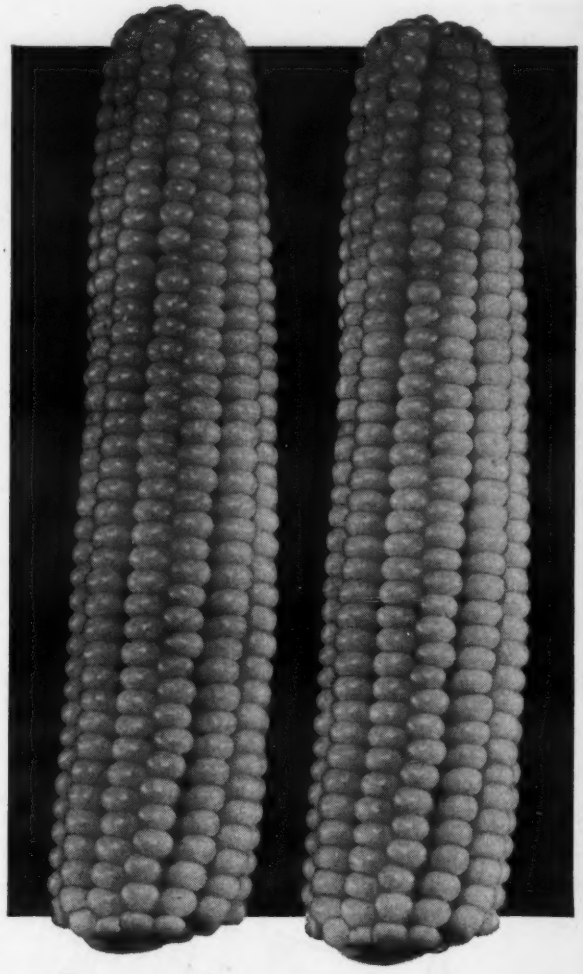
Development and application of beta carotene to add yellow color and vitamin A to foods are explained in 20-pg, pocket-size booklet. It emphasizes that this color is in no way derived from coal tar, rather is identical chemically and biologically with beta carotene as nature "makes" it.

"The Story of Nature's Yel-

(*Continued on next page*)

QUESTION

Identical in every way. But one will taste better after processing! Why?



ANSWER **One will contain instant-dissolving Zest® . . . of course**

Certainly one will have more taste appeal, sales appeal than the other. For it will contain Zest Monosodium Glutamate. No matter how or what you process—whether canned or frozen—whether vegetables, meat pies, TV dinners or seafood—Zest perks up natural flavors. Guards against flavor loss during storage and processing. Imparts greater appetite appeal without any change in formula or processing time.

And Zest is so economical. For just a fraction of a cent per pound of finished product, Zest makes natural flavors come alive. For information on Zest, Staley's 99 + % pure Monosodium Glutamate, write today to:

A. E. STALEY MFG. CO., DECATUR, ILL.
Branch Offices: Atlanta • Boston • Chicago • Cleveland • Kansas City
New York • Philadelphia • San Francisco • St. Louis

Zest® **"makes" the flavor . . . and flavor makes the sale**

6790 on Reader Service Slip

HOW TO SIGNAL A SHOPPER'S ATTENTION!

Let Pfizer Vitamin C Add New Sales Appeal to Your Canned Fruit Juice Blends

● Today, fruit juice blends with "something extra" make a shopper stop—and *buy*.

The words "Vitamin C Fortified" have just this kind of selling power... they offer a busy housewife a built-in reason for choosing your brand. And this attention-getting, sales-producing feature will cost you just *a fraction of a cent per unit*. It's truly a low-cost way to keep sales up high.

Pfizer, a leading producer of vitamins for 20 years, offers you Vitamin C (ascorbic acid) in the most convenient, easy-to-handle forms. In addition to vitamin fortification, Pfizer Ascorbic Acid can also provide an important safeguard for your beverages against color and flavor fading that result from oxidation during shelf life. For full details about Pfizer Vitamin C write to:

CHAS. PFIZER & CO., INC.
Chemical Sales Division
630 Flushing Ave., B'klyn 6, N. Y.
Branch Offices: Chicago, Ill.; San Francisco, Calif.; Vernon, Calif.; Atlanta, Ga.; Dallas, Texas

Pfizer

Pioneer in the Manufacture of Vitamins

ingredients

(*Continued from preceding page*)

low—Beta Carotene" is issued by Hoffmann-La Roche Inc., Roche Park, Nutley 10, N.J.

For your copy simply circle 6791 on Reader Service Slip.

Wholly edible guar gum replaces, upgrades starch

A water soluble colloid which is a wholly edible guar gum is being used as a replacement for starch in various processed foods. Also, several starch producers are using it to upgrade starch, and to create new starch blends.

This free-flowing, powdered colloid is described as possessing about 6½ times the thickening power of starch. Relatively high viscosity is not adversely affected by high heat. Water solutions of the gum are pale, translucent, gray, tasteless, and odorless.

Literature on "V-7-E" wholly edible guar gum is available from The Burtonite Co., P. O. Box 7, Nutley 10, New Jersey.

For your copy simply circle 6792 on Reader Service Slip.

Improving turkey feeds

Upping protein quality of turkey feeds by adding methionine is discussed in 14-pg booklet. Relationship of feed-energy to protein and amino acid requirements for turkeys has followed the successful studies and demonstrations on chickens. "Methionine as a Supplement in the Diet of Growing Turkeys" is a report of Grasselli Chemicals Dept., E. I. Du Pont de Nemours & Co., Inc., Wilmington 98, Del.

For your copy simply circle 6793 on Reader Service Slip.

Grant patent on phosphate soluble in brine

A phosphate, totally soluble in brines for processing prepared meats, has been awarded a US patent.

Based on lab studies and

in-plant research, phosphate dissolves and stays dissolved during processing in either brine or plain water. It will not settle to tank bottom.

Hams have better color and are juicier than when using previously available phosphate.

Approved for use in federally inspected operations.

Solphos soluble phosphate is development of Meat Industry Suppliers, 770 Frontage Rd., Northfield, Ill.

For more information circle 6794 on Reader Service Slip.

Sauce, gravy thickener stable under canning, freeze-thaw temp

Uses: Canned and frozen gravies, foods requiring gravy base, prepared pie fillings, and sauces with tomato base.

Features: Starch thickener remains stable under varied processing conditions. Gravies made with thickener remain clear and appetizing on thawing, do not require agitation to reblend ingredients.

Description: Col-Flo 67 thickener is modification of manufacturer's standard Col-Flo. Will not alter or influence taste of finished food product.

Trial samples of Col-Flo 67 are available from National Starch Products Inc., 270 Madison Ave., New York 16, New York.

For more information circle 6795 on Reader Service Slip.

Tells how corn oil made, describes uses in foods

Manufacture and uses of corn oil, as well as methods of storing, packaging and handling, are discussed in a 20-pg booklet.

It traces the sources of corn oil. For example, most corn oil is produced by corn refiners, who process the kernel to obtain starch and other valuable substances. The booklet reports that U. S. corn refiners are currently producing 275 million lb of corn oil

(*Continued on next page*)

Announcing...

FRITZSCHE BROTHERS, INC.

ESSENTIAL OILS & CHEMICAL PREPARATIONS

PORT AUTHORITY BUILDING · 76 NINTH AVENUE

NEW YORK 11, N. Y.

CABLE ADDRESS "FRITZBRO" NEW YORK

TELEPHONE WATKINS 9-4100

ADDRESS ALL COMMUNICATIONS TO THE COMPANY

FOUNDED 1871

April 1, 1958.

TO ALL AMERICAN MANUFACTURERS
OPERATING IN SOUTH AMERICA
WHO USE PERFUME OR FLAVORING
SPECIALTIES, AROMATICS OR
ESSENTIAL OILS.....

We are happy to announce the founding of

FRITZSCHE BROTHERS ARGENTINA, S.A.

with offices and modern manufacturing facilities in the capital city of Argentina.....Buenos Aires. Ready now to render the same type of efficient, dependable service for which the name FRITZSCHE has long been known, our new affiliate will be in a position to supply South American manufacturers and other soft currency areas with essential oils, perfume and flavor compounds guaranteed to be of the same type, quality and uniformity as those presently available to U.S. customers. It will be possible for foreign branches of large U.S. food, beverage, pharmaceutical and toiletry manufacturers to get prompt delivery direct from Fritzsche Brothers Argentina, S.A. of perfume and flavoring specialties identical to those now being supplied the parent firms.

Once these users of our products have become fully acquainted with the quality, availability and economic advantages that will be theirs under conditions now prevailing in this area, we are confident a large and continuing demand will develop for these services.

We shall be glad to meet with the principals or authorized representatives of firms now operating in South America, or contemplating such operations, for purposes of discussing these new facilities and giving consideration to arrangements which would be mutually advantageous.

Very truly yours,

FRITZSCHE BROTHERS, INC.

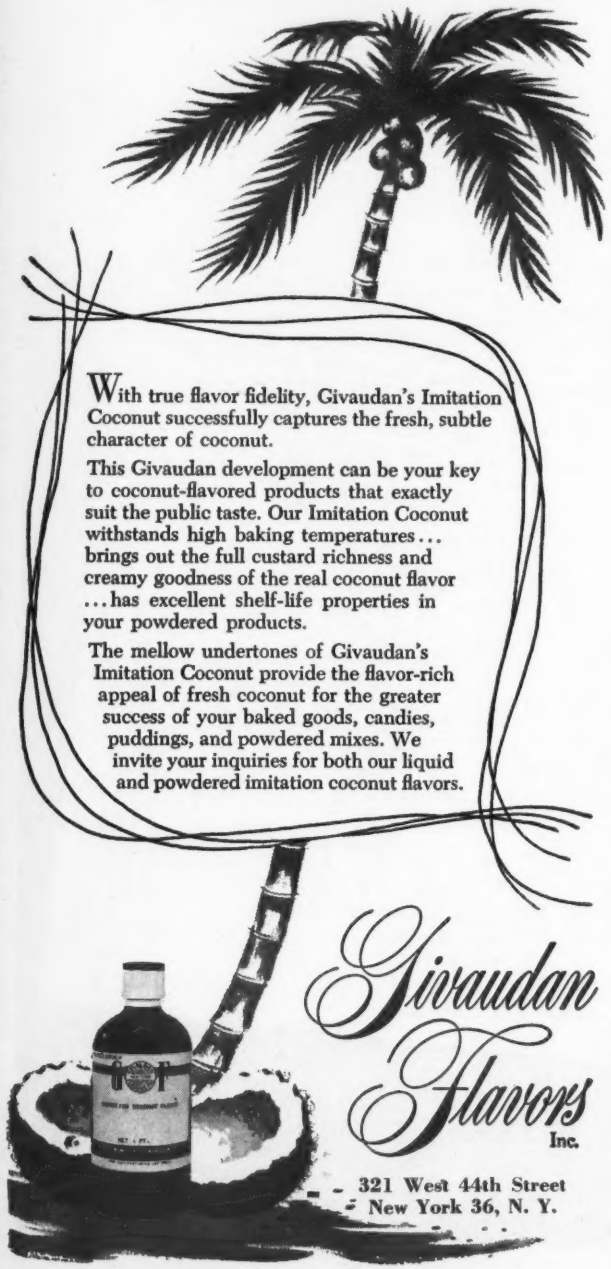
John D. Casullo,
President.

6796 on Reader Service Slip

Now...

a fresher-than-ever

IMITATION COCONUT FLAVOR!



With true flavor fidelity, Givaudan's Imitation Coconut successfully captures the fresh, subtle character of coconut.

This Givaudan development can be your key to coconut-flavored products that exactly suit the public taste. Our Imitation Coconut withstands high baking temperatures... brings out the full custard richness and creamy goodness of the real coconut flavor ...has excellent shelf-life properties in your powdered products.

The mellow undertones of Givaudan's Imitation Coconut provide the flavor-rich appeal of fresh coconut for the greater success of your baked goods, candies, puddings, and powdered mixes. We invite your inquiries for both our liquid and powdered imitation coconut flavors.

Givaudan Flavors Inc.

321 West 44th Street
New York 36, N. Y.

6797 on Reader Service Slip

ingredients

(*Continued from preceding page*)

(crude basis) annually. About 99 percent of crude corn oil is eventually refined. An appendix contains analytical data on physical and chemical properties.

"Corn Oil", illustrated booklet, is issued by Corn Industries Research Foundation, Inc., 3 E. 45th St., New York 17, N. Y.

For your copy simply circle 6798 on Reader Service Slip.

Isoascorbic for meats

Wall chart for placement in production areas shows correct amount of isoascorbic acid or sodium isoascorbate solution to be added to cooked, cured, and comminuted meats to maintain color. Chart is based on desired level of use and meat chopper capacity.

Chart, measuring 11" x 11", is available from Chemical Sales Div., Chas. Pfizer & Co., Inc., 630 Flushing Ave., Brooklyn 6, New York.

For your copy simply circle 6799 on Reader Service Slip.

Food color guide

Pocket-size booklet contains revised information on permissable certified food colors, as well as data on their solubility and stability in various liquids. Also contains blending information for production of wide range of color shades.

"Atlas Food Color Guide and Price List", 34 pg, issued by H. Kohnstamm & Co., Inc., 83-93 Park Pl., New York 7, New York.

For your copy simply circle 6800 on Reader Service Slip.

Combine other ingredients in bulk, tablet salt

Under new service furnished by salt producer, processors can order bulk or tablet salt which includes other ingredients such as spice, seasoning, MSG, citric acid, ascorbic acid, or calcium chloride. Tablets can be pressed to contain the exact amount of

Improved Quality...
Increased Uniformity...
Added Nutritive Value
for your Food Products

SHEFTENE®
Sodium Caseinate

Few processing ingredients you can think of can perform so many functions, and add so many real benefits to your product as Sheftene Sodium Caseinate — the nutritive, *high-quality* milk protein.

Here are just a few of its principal applications:

As a protein supplement in pharmaceutical, infant and diet foods!

As an emulsifier for fats and water binder in processed meats!

As a lysine-rich additive to cereals and bakery products!

As a fat-blocking ingredient in making doughnuts!

As a stabilizer and emulsifier in milk shake bases!

As an agent to reduce shrinkage, improve body and texture of ice cream!

As a coagulant and clarifier for wines!

Samples, data and technical assistance are available upon request.

Write or phone today Dept. FP-558

SHEFFIELD CHEMICAL
Norwich, N.Y.
A DIVISION OF NATIONAL DAIRY PRODUCTS CORPORATION

SHEFTENE WHIPPING COMPOUND

An ideal milk protein concentrate for vegetable fat toppings. Adds no 'foreign' flavor or odor! Completely stable when heated — even to boiling! Homogenizes readily — doesn't 'weep'! Outstanding 'keeping' qualities! Whips to perfect consistency!

NOT A SKIM MILK POWDER

Write for data and sample

6801 on Reader Service Slip

salt plus ingredient to be added to each container.

Processor selects supplier of the added ingredients. This service is provided at the cost of mixing, tableting, and extra transportation charges (if required).

New mixing and tableting service is available from Morton Salt Co., 120 S. La Salle St., Chicago 3, Ill.

For more information circle 6802 on Reader Service Slip.

Improved cassia flavor has greater sweetness, free of bark fibre

Newly-developed cassia resinoid which, it is claimed, provides a smooth flavor where typical cinnamon is not desired, or where additional flavor is required to supplement cinnamon powder. The resinoid contains the complete extractive material of the cinnamon bark without the bark fibres. Is stable, has sweeter and finer flavor than oil of cassia, which can contain extractive materials other than the oil.

Cinnamon (Cassia Resinoid) is a development of Flavorex Co., Inc., 302 S. Central Ave., Baltimore 2, Md.

For more information circle 6803 on Reader Service Slip.

Flavor-Upper...

HO-HUM, SAME OLD THING..

WHY, IT TASTES LIKE...

...IT IS, *REAL* STRAWBERRY!

How Sweetose makes

True Fruit Flavor

Come ALIVE

IMPROVES TEXTURE, TENDERNESS!
GIVES EYE-APPEALING BRIGHTNESS
TO ALL JAMS, JELLIES, PRESERVES!

Flavor that's alive means sales that *stay* alive! And you are sure to have flavor when you use Sweetose, Staley's enzyme-converted corn syrup, in your jams, jellies and preserves. Fast-cooking Sweetose is made to bring out the fresh, fruity, balanced flavor your customers look for.

And you get lots more besides flavor. Easy-to-handle Sweetose enhances color and sheen, gives better appearance to any fruit. Texture is improved, too. Yet Sweetose costs less than other sweeteners. Why don't *you* try Sweetose . . . and prove its dollar-saving, flavor-building advantages to yourself? See your Staley Representative or write us today for further details.

A. E. Staley Mfg. Co., Decatur, Illinois
Branch Offices: Atlanta • Boston • Chicago • Cleveland • Kansas City
New York • Philadelphia • San Francisco • St. Louis

Sweetose®
THE *ORIGINAL* ENZYME-CONVERTED CORN SYRUP

6804 on Reader Service Slip

Accent Flavor-Gram

CAPSULED NEWS FROM THE WORLD OF FLAVOR

✓CATERERS "CATER" TO FLAVOR RESEARCH. Such research* sold thriving Duchess Party Foods, Inc., of Oakland, California, on the "flavor retention" qualities of monosodium glutamate. They first used it in their sandwich mixes—now use it in poultry, casseroles, cole slaw and many frozen foods, too. Duchess does flavor research both "on its own," and in conjunction with the research departments of its large suppliers.
*Institutional Feeding and Housing, April '57

✓FLAVOR STAYS "NEW" IN FROZEN BEEF STEW! After a year of storage, frozen beef stew still keeps its good flavor—when the proper amount of monosodium glutamate has been added. Flavor authorities* report that not only is initial flavor enhanced—but this flavor improvement is still apparent 12 months later.
*Tressler & Evers, Vol. II

✓A LOOK INTO THE FUTURE. The Nov. '57 issue of Institutions Magazine reviews the startling changes in quantity cookery in the last 20 years—predicts some of the changes the future may bring. Example: more foods preserved with antibiotics or through use of atomic energy. The magazine also cites manufacturers who make food products indispensable to today's quantity menu planner—among them, Ac'cent•International, makers of pure monosodium glutamate.

✓EAST MEETS WEST IN TAKE-OUT FOOD. The Chinafood Kitchen, Salt Lake City, enjoys a big business in home-delivered food . . . both American and Chinese style. This restaurant uses monosodium glutamate in its Chinese dishes as well as in its American specialties—including a popular fried chicken dinner, so speedily delivered that customers dubbed it "Quickee Chickee!"

✓GLUTAMATE CAN KEEP VEGETABLES "YOUNG." During storage, shipping and processing, the natural glutamate content of many vegetables progressively fades. But Ac'cent, pure monosodium glutamate, builds up the glutamate content and even intensifies the natural flavor—without adding a flavor of its own. Because Ac'cent enhances and retains flavors in most meats, poultry, fish and soups, as well as vegetables, it is used today in more than 8,000 processed and prepared food items.

✓FLAVOR IS THE MAIN BUSINESS OF AC'CENT•INTERNATIONAL. These monthly reports on new developments and happenings in the Food Processing Industry are just one of the many services we offer you. As the American pioneer of monosodium glutamate and flavor development, let our experience, our research and technical facilities and qualified personnel help you solve your flavor problems. If you would like to know more about the news items reported here, just drop a line on your letterhead to Technical Service Dept., Ac'cent•International, 20 N. Wacker Drive, Chicago 6, Ill.

Accent® BRAND PURE MONOSODIUM GLUTAMATE
AC'CENT • INTERNATIONAL, Division of International Minerals & Chemical Corp.
REGIONAL OFFICES

485 Lexington Ave.
New York, N. Y.
Tel. Oxford 7-4040

805 Peachtree St., N. E.
Atlanta, Ga.
Tel. Trinity 5-8353

214 Front Street
San Francisco 11, Calif.
Tel. Yukon 2-1585

20 N. Wacker Dr.
Chicago 6, Ill.
Tel. Financial 6-1800

6805 on Reader Service Slip

Tailored Flours

(*Continued from page 36*)

moval of this 30 percent material remarkably upgrades the remaining 70 percent for bread making.

Similarily, by removing high-protein, very fine material from a soft wheat cake flour, the resultant cake flour portion is much upgraded for cake making, and the high-protein fraction can be used as a strengthening agent in other flours.

Air classification of flours is being hailed as the first major improvement in flour milling in many decades.

Flour so processed is becoming available at no extra cost. The cost of the additional processing is offset by the value added by the upgrading which results, as well, in better utilization of wheat fractions.

A more detailed report on this development will be presented in a future issue of FOOD PROCESSING.

(Taken from a paper presented by Frank W. Wichser at the recent Annual Meeting of the American Society of Bakery Engineers. For additional information address him at Pillsbury Mills, Inc., Minneapolis 2, Minnesota.)

3 citrus flavors added to powdered juice line

Three citrus juices are available as free-flowing, non-hygroscopic powders. Originally only lemon juice was being manufactured.

These powders are "coated," thus remain stable in non-vacuum containers.

Lime juice powder is 36 percent solids, 24 percent acidity; orange juice is 50 percent solids, 4.5 percent acidity; grapefruit juice is 50 percent solids, 5 percent acidity.

Juice powders F are development of Florasynth Laboratories, Inc., 900 Van Nest Ave., New York 62, N.Y.

For more information circle 6806 on Reader Service Slip.

Lift truck begins moving from field truck pallets stacked with over 60 flat-bottom crates, each filled with 35 lb of tomatoes. Arrows point to stakes and rope to hold load on truck. Brooks Foods has about 200,000 of these crates

Field container costs cut 50%

Wirebound crates for tomato harvesting have six seasons of service, hampers only three seasons, Brooks Foods finds

Flat-bottom, wirebound containers have led to a 50 per cent slash in expenditures for field crates at the Indiana tomato processing plants of Brooks Foods, Inc.

The crates have a longer field life than the previously used hampers. Clarence R. Brown, in charge of the Indiana operations, expects the wirebound crates to be in service as long as six seasons. Hampers lasted only three seasons.

These crates are also reducing field-to-receiving dock costs — as much as 50 per cent. Their flat, square bottoms can be easily carried on pallets (see photo).

Hampers could be stacked only three-high on the field trucks. Load was unsteady, even when securely roped.

Wirebound crates are stacked six- to seven-high on a pallet. Need only be lightly roped to bed of field truck.

At the processing plant, lift trucks move the loaded pallets to head of wash flume, where crates are emptied.

Field trucks carry six pallet loads. These trucks can be unloaded quickly and be ready to return to the picking fields for another load.

Use of wirebound boxes and pallet loading have eliminated several handlings required when tomatoes were carried in hampers. Damage to tomatoes has also been reduced, even though the field trucks now carry heavier loads.

List of suppliers of these James-type field crates is available from Wirebound Box Manufacturers Assn., 222 W. Adams St., Chicago 6, Ill.

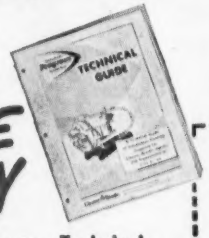
For your copy simply circle 6807 on Reader Service Slip.

Put yourself in the *Progress* picture

You'll profit more with the Cleaver-Brooks Progress boiler because it simplifies your planning, purchase and installation. No scatter-buying or boiler-building on the job. You can save up to 2 days' time by installing Progress, a complete, integrated, factory-tested package — ready for you to hook up to service lines. A Cleaver-Brooks representative starts the boiler, trains the attendant. Outstanding Progress features: Four-pass, forced-draft design; electronic controls; soft-flame start; clean-burning, quiet operation; guaranteed 80% efficiency — assure you customer satisfaction.

The Progress is available in 7 sizes to 2,010,000 Btu. Oil, gas, and combination oil/gas-fired models fit all types of heating needs. See your nearest *Qualified Cooperative Wholesaler* or write today.

For your FREE COPY of the "Progress Technical Guide of Installation Planning," fill in the coupon today.



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PROGRESS PACKAGED BOILER
Built exclusively for commercial heating.

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Dept. F, 357 E. Keefe Ave., Milwaukee 12, Wis.

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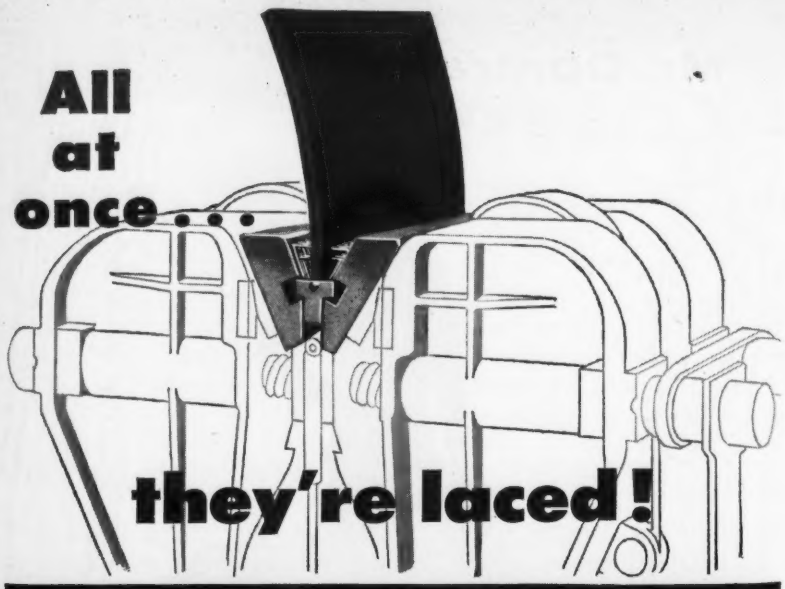


All at once . . . they're laced!

with Clipper HOOKS and LACERS

You can lace belts up to 12 inches wide all in one operation with Clipper Belt Hooks and Lacers. Until the Clipper hooks shown above were inserted into the jaws of the lacer, they were protected and held in place by a reinforced card that is easily stripped away once the hooks are in the lacer. The lacer jaws, exerting up to 45,000 lbs. of pressure, embed the hooks firmly and uniformly across the width of the belt. And in the belt, each hook is separate from the others to give flexibility not possible with other methods of belt lacing. For unmatched speed, strength and flexibility, depend on the proved Clipper machine-lacing method.

FOR MORE INFORMATION

Detailed product information and case history examples of Clipper machine-lacing benefits are contained in Bulletin No. 157. Send for your free copy today.

Ask your Industrial Distributor for Clipper Products

Clipper BELT LACER COMPANY

972 Front Ave., N. W., Grand Rapids 2, Michigan

6809 on Reader Service Slip

crop production

New insect repellent excels in USDA tests

Available in aerosol, lotion, and stick forms

A repellent, especially effective against biting insects, including mosquitoes, chiggers, fleas, ticks, and biting flies, is based on diethyl, meta-toluamide.

USDA tests showed its superiority over other repellents, especially in resistance to rubbing and to washing. It retains resistance to perspiration.

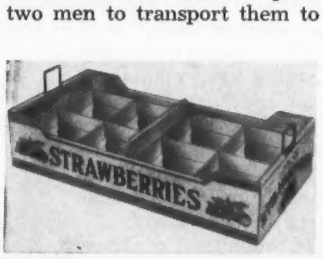
Clothing and other fabrics can be treated by saturating them with emulsions or drycleaning preparations containing the new repellent. It is neither sticky nor greasy, has pleasant odor and color.

List of formulators of Meta Delphene repellent is available from its developer, Hercules Powder Co., Agricultural Chemicals Div., Wilmington 99, Del.

For more information circle 6810 on Reader Service Slip.

Design field-assembled berry tray, cup

Eight pack tray, made of paperboard is making it possible for growers to carry more berry baskets in average farm truck. Each tray measures 22″ across — four can be placed across a 90″ wide pickup truck. Piled 10 to 14 high, an average farm truck can carry 1000 to 1200 quarts of berries compared to 600 wooden baskets in wooden crates. Field studies show that wooden baskets and crates require two men to transport them to



Self-locking paperboard tray (above) and cup (left) designed to lower damage of picked berries

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- No rusting or corroding
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- Quieter rolling
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pickers and to nail down the crates.

The tray as well as a corrugated cup are shipped knocked down; can be easily assembled in the field. Paper cups can be easily handled by one person. To reduce damage to berries, trays have special shoulders and wire handles.

These studies were reported to the Vegetable Growers Association of America by W. W. Cassidy, American Folding Box Div., Central Fibre Products Co., 1917 Rutgers St., St. Louis 4, Mo.

For more information circle 6812 on Reader Service Slip.

Gopher bait in tablet form proved lethal in tests

A new gopher bait, in handy tablet form, is now available for farm use. It has been successful, in extensive tests, with field and forage crop producers. Effectiveness is due, in large measure, to incorporation of attractants, made of plant derivatives and essential oils. Despite the bait's appeal, it is generally recommended that the tablets be used as part of the established probe method of entering the gopher burrow. Having found open work hole, or main run, several tablets are dropped in, and entry hole covered with paper or a rack.

Gopher tabs contain 0.6% strychnine alkaloid, a powerful poison. They are packaged in bottles containing from 45 to 1400 tablets.

Gopher Tabs are available from Cooke Laboratory Products, Pico, Calif.

For more information circle 6813 on Reader Service Slip.

Transplant faster

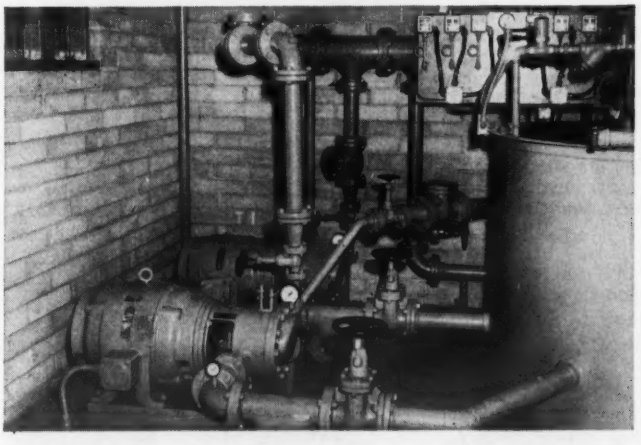
Accurate, mechanical method of transplanting is described and illustrated in 8-pg folder. It utilizes a two-wheel, tractor-pulled machine with a wide tray from which plants are gently taken by "plant hands", then placed firmly in the soil.

(*Continued on next page*)

A hippo surfaces with a cavernous yawn—powered by water from F-M pumps shown below.

From butterflies to hippopotami

F-M pumps make animals "live"



In one of the world's most fabulous amusement parks, waterfalls tumble; rivers flow; hippos yawn, and giant butterflies flap their wings—all water-powered by Fairbanks-Morse pumps with F-M motors.

Although a most unusual application, these F-M installations demonstrate the flexibility and experience of Fairbanks-Morse in working with the engineers of any organization.

Whatever type, size or capacity pumps you need—you're sure of satisfaction when you call in your F-M Sales Engineer. Contact him today, or write directly to Fairbanks, Morse & Co., 600 South Michigan Avenue, Chicago 5, Illinois, Dept. FP-5.

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6814 on Reader Service Slip

6 years of impulse trapping with Yarways

A. P. Bergstrom, Chief Engineer, points out one of many Yarway Impulse Steam Traps in Horlicks plant to Yarway representative

Q. Mr. Bergstrom, as Chief Engineer here at the Horlicks Corp. plant in Racine, Wis., you use a lot of Yarway Impulse Steam Traps. Why?

A. Well, we take pride in our plant, and our production. We've got one of the most efficient power plants in the state, and our process plant operates 24 hours a day, 5 days a week, the year around, manufacturing malted milk. Our equipment must be dependable. This includes traps, too. In six years, only once have we had to repair a Yarway trap. We replaced a valve assembly and this took just a few minutes.

Q. How many Yarways do you use?

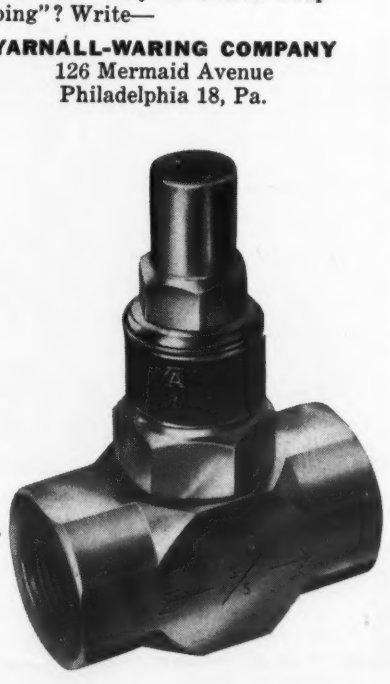
A. Probably 50 or 75. They're all over — on unit heaters and steam lines — and doing a fine job!

Q. Any other features you like?

A. Yes. Size is important. They do a big job in small space. They're easy to fit into our piping hookups.

Want a copy of free booklet "The How and Why of Steam Trapping"? Write—

YARNALL-WARING COMPANY
126 Mermaid Avenue
Philadelphia 18, Pa.



YARWAY Impulse ...a good way to specify steam traps

OVER 1,225,000 YARWAY IMPULSE STEAM TRAPS ALREADY USED.
STOCKED AND SOLD BY 270 CONVENIENT LOCAL INDUSTRIAL DISTRIBUTORS.
NATIONWIDE YARWAY ENGINEERING STAFF AT YOUR SERVICE.

6815 on Reader Service Slip

(*Continued from preceding page*)

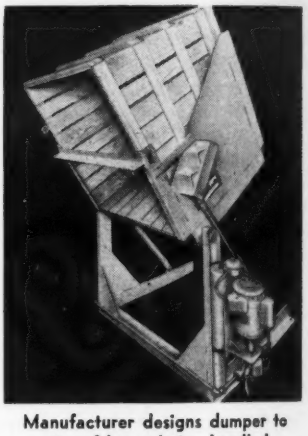
Unit also has water-metering system to assure right amount for each transplant.

"42 Transplanters" is issued by Powell Mfg. Co., P.O. Drawer 5, Wilson, N. C.

For your copy simply circle 6816 on Reader Service Slip.

Battery operates field pallet box dumper

Dumper handles loads up to 4000 lb, elevates up to 60". Loads can be stopped and held at any point throughout dumping cycle. Dumper is mobile, driven by electric motor utilizing 12v battery or conventional power line as source of electricity.

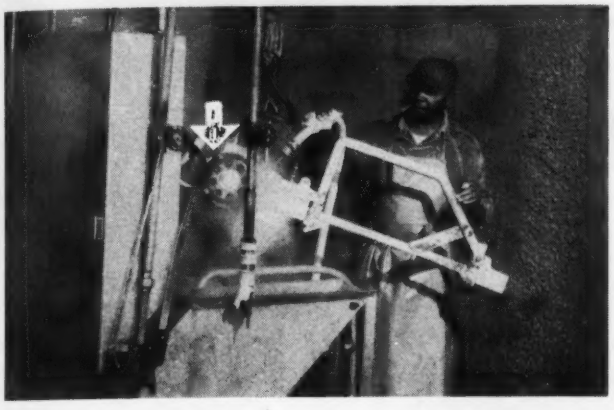


Manufacturer designs dumper to size of boxes being handled

Tubar Twin Cylinder Box Dumper is manufactured by Uhrden, Inc., P. O. Box 193, Dennison, Ohio.

For more information circle 6817 on Reader Service Slip.

Open-frame motor of splitting saw is steam-cleaned at least once a day at Pride Packing. Before "encapsulating" windings, motor lasted six months, now there has been no failures in two years



STOPS MOTOR FAILURES

Burying windings in plastic protects motor against moisture

MANIS L. CLINE, Superintendent
Pride Packing Co.
as reported by **KARL ROBE**

Problem: At Pride Packing Co., Los Angeles, motor failure was frequent on the beef carcass splitting saw. This saw is powered by a 1 hp nonenclosed motor, and receives rugged use cutting beef carcasses in half.

Worker rides a vertical hydraulic platform (at left in photo) to a position at top of suspended carcass. Saw is on a counterweight and rises with the operator.

Operator positions saw, and the reciprocating blade cuts downward through the heavy spinal column and flesh of animal. Platform carrying the operator descends by push-button control as cutting proceeds downward.

At end of shift, and sometimes more often, the entire saw, motor, and surrounding area are cleaned with steam.

Under these conditions motor failures were frequent, with periodic rewinding necessary. Motors lasted about six months before requiring shop work and rewinding.

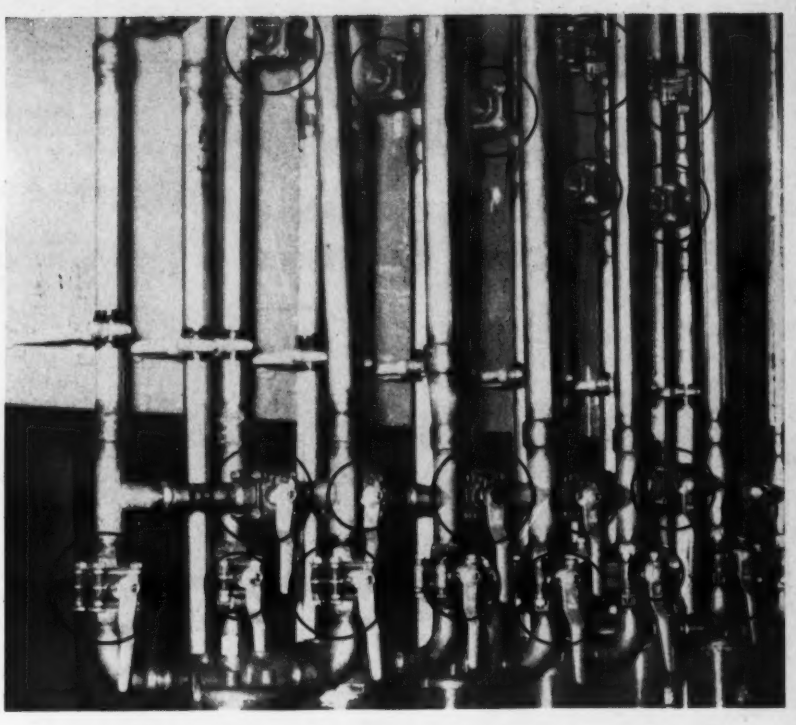
Solution: After last failure two years ago, stator and rotor windings of the motor were rewound, then encapsulated with an epoxy plastic. The protective plastic completely "buries" the windings and sets up catalytically. This method prevents possibility of voids in the encasing plastic which can result from solvent-containing formulations.

Results: Present motor has held up for two years now, with no signs of trouble. Entire assembly is still steam-cleaned once a day or oftener.

Other motors in the plant are also being encapsulated if they operate under wet conditions. Cost of encapsulating is approximately 90 to 100% that of a regular rewind—but elimination of failures and down-time have more than justified extra investment.

Epoxylite encapsulating material is development of Epoxylite Corp., 10829 East Central Ave., El Monte, Calif.

For more information circle 6818 on Reader Service Slip.

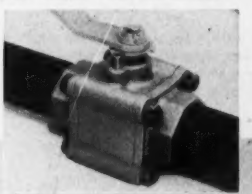


Only the ECON-O-"MISER" Ball Valve was able to solve this problem for PathéColor, Inc.

THE PROBLEM: To find a valve that would meet all of the following requirements:

1. Quick visual indication of position and quarter turn operation. 2. Excellent flow characteristics and positive shut-off. 3. The advantages of flange construction without the bulk and weight of conventional flanged valves. 4. Easy & quick disassembling for low cost maintenance. 5. The most compact and economical installation of Type 316 stainless steel valves possible.

SOLUTION: *Specifying* and *installing* Worcester's Econ-o-"miser" Ball Valve. In so doing PathéColor found a valve that provides a positive seal, a flanged construction much more compact than conventional valves that could be socket welded. In addition many unions and companion flanges were eliminated with the overall result that savings on this installation alone amounted to many hundreds of dollars.



Valves available, ¼"-2", in following standard materials*: Bronze, Aluminum Bronze, Aluminum, Carbon Steel and Types 303 and 316 Stainless Steel. Standard Seat and O-Ring materials*: Buna-N, Neoprene, and Teflon.

**Other materials available on request.*

For further information and descriptive literature write to:

WORCESTER VALVE CO., INC.

16 PARKER STREET • WORCESTER, MASS.

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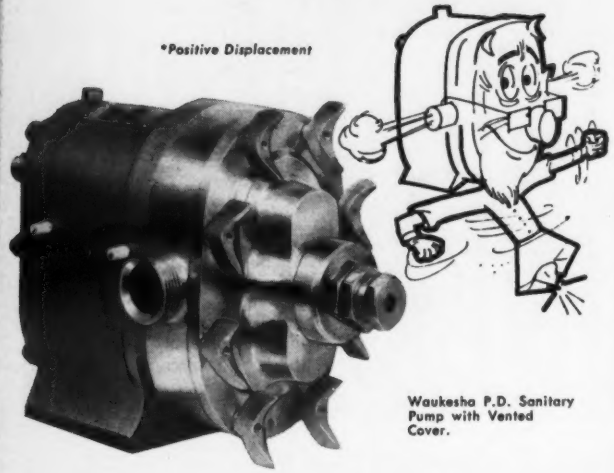
all WAUKESHA P. D.* PUMPS

grow up to be healthy active oldsters

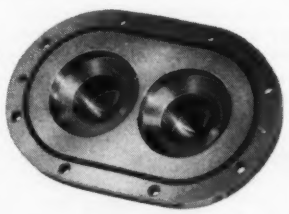
*Positive Displacement

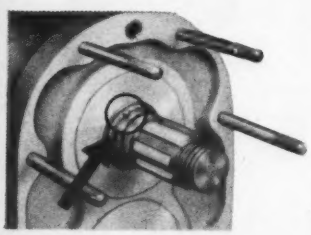


Waukesha P.D. Sanitary Pump with Vented Cover.

WAUKESHA PUMPS grow old in service but stay young in performance. That's because WAUKESHA builds ruggedness and long life in them at the start. And they have many other virtues: quick, easy take-down, easy assembly and low maintenance, are examples. These are but a few of the many long-life features that make WAUKESHA far and away the leading rotary, positive displacement pump in the world. Why not send today for the catalog that describes *all* the user-benefits?

Re-usable Oval Ring replaces fussy paper gaskets . . . provides positive vacuum without excessive tightening of the pump head.





Larger shaft and stronger splines reduce wear by giving high rigidity to the impellers. Slotted stainless steel shaft-sleeve keep sleeve and shaft rotating together.

Waukesha FOUNDRY COMPANY

DEPT. F-5 • WAUKESHA, WISCONSIN

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sanitation

Service offers supplies and instructions so you can

maintain RR sidings efficiently

In many instances industrial railroad sidings are among the most neglected of all railroad trackage. Not maintained by railroads and outside usual scope of maintenance operation, many plants have no trackage care program or crew of "gandy dancers".

Plant maintenance men can become proficient in all phases of siding track maintenance by using instruction material, and tools and supplies now made easily available.

An important part of any program is keying operations to a check list. Some of the most important items are roadbed, ties and tie plates, and rails and joints.

Prolonged neglect leads to weeds, lost ballast, and loose spikes

Condition of roadbed, with emphasis on drainage and ballast, is the most important single factor affecting efficiency of track. Good ballast prevents growth of weeds and helps to keeps ties relatively dry. Ballast should be level with ties at center and taper to 1½" to 2" below ends of ties. Ballast should extend to about 6" beyond ends of ties, then slope sharply to subgrade. Mud,

On this track bolts, plates, spikes, etc., all meet check test

For Acid-Proof *floors*

in Industrial and Processing Plants

SAUEREISEN No. 54

Test it Yourself

Special trial order, 100 lb. lot, only

$12

Here's a revolutionary Pour-Lay Concrete that resists acids, salts, solvents, water, oil and high temperatures. May be poured into place and leveled off, ready for use in hours. Can be applied as a topping over existing floors. Also recommended for tanks, pits, vats, foundations, sewers, etc.

We invite your inquiries without obligation. SAA

Sauereisen Cements Co., Pittsburgh 15, Pa.

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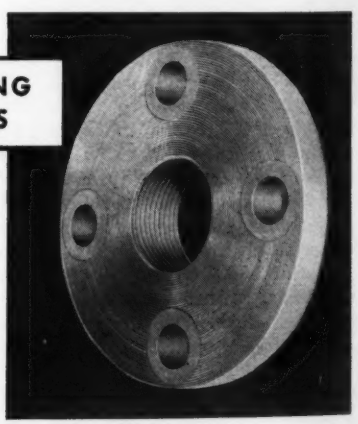
UPVC PIPING PRODUCTS



New flange seals tight

...eliminates gasket slipping

This new **ttp** flange has a concentric-serrated face which gives a better grip on gasket, helps avoid overstressing of bolts, seals more effectively than flanges with spiral type serrations. Injection molded from *unplasticized* polyvinyl chloride (UPVC). Available in sizes ½ through 6 inches from your nearby **ttp** distributor. Complete line **ttp** catalog 119 free on request.

TUBE TURNS PLASTICS, INC.

Dept. FP-5, 2929 Magazine Street

Louisville 11, Kentucky

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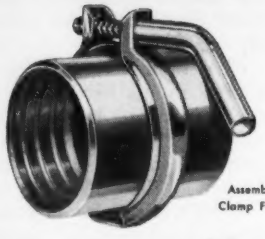
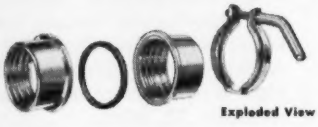
positive sealing with NEW G AND H CLAMP FITTINGS



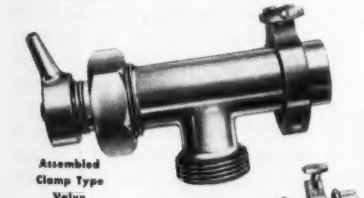
Assembled Clamp Fitting



Exploded View

Check how these G. & H. Features bring you greater savings in time and labor.

1. *Added Rigidity* through metal to metal contact of ferrules in each union.
2. *Greater Flexibility* with new streamlined stainless steel screw type handle clamp. No fumbling with unwieldy snap clamps.
3. Full Range of sizes in gleaming Stainless Steel polished to a smooth dairy finish.



Assembled Clamp Type Valve

Exploded View

NEW clamp type Bulk Pick up Truck Tank Valve

- Disconnects in seconds — no tools needed.
- Precision manufactured — assures trouble free performance.
- Exclusive clamp-type lightweight Stainless Steel mounting.

Write for complete information today!

G AND H PRODUCTS CORPORATION
2409 Fifty-Second Street • Kenosha, Wisconsin

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oozing up through ballast, is telltale sign of poor drainage under ballast.

Tie plates distribute load from rail to tie, give rail proper cant, hold rail rigidly to gage, protect tie from excessive wear. Tie plates should lie flat on tie with full width of shoulder of plate resting against base of rail.

Correct rail joints, right space between rails, clean ballast

Rails require little maintenance but should be replaced if worn. Reconditioned rails can be used and at great savings over cost of new. The joint unites rail sections in one continuous rail and holds rail ends in place to assure rail alignment.

Maintenance procedures for switches, frogs, guard rail, and other components are similar to the ones already mentioned.

A 16-pg instruction pamphlet — "Track-Check Kit" — has been published by L. B. Foster Co., P. O. Box 1647, Pittsburgh, Pa.

For your copy simply circle 6824 on Reader Service Slip.

Versatile detergent cleans walls, floors, machinery

Technical bul describes properties of general cleaning detergent, especially suitable for use in bakeries. Typical applications are removal of carbon on wrapping machine heater plates, removal of scorched stains on oven porcelain, and the cleaning of bread racks and shelves and aluminum utensils. This non-toxic product dilutes with from one to 15 parts of water.

ND-150 detergent bul is available from National Disinfectant Co., 2417-19 Commerce St., Dallas 26, Texas.

For your copy circle 6825.

to bring these low costs

Equipment	Soil	Oakite Material	Cost per Unit
1200 gal. cooking mixers	cooked on meat, cereal fats	*Oakite General Cleaner	$1.09
300 gal. juice kettles	burned on deposits, stains	Oakite General Cleaner Oakite Comp. #84M	.78 .52
sausage stuffers	grease and meat	Oakite General Cleaner	.27
steak lines & tanks	burned on meat	Oakite Comp. #62	1.38
stainless smoke houses	carbonized grease	Oakite Comp. #62 Oakite General Cleaner	4.92
2900 sq. ft. floor	fats, dirt, spillage tire marks	Oakite Comp. #24	2.49

*Drained on to floor to clean area around equipment, too

These figures from the actual work-sheet in a midwest food plant tell only part of the story. Here's what happened.

First, the local Oakite man reviewed all the plant operations . . . then he sat down with pencil and paper. He selected cleaning compounds that could do double and triple duty, thereby minimizing storage and handling. He recommended, for each job, the most effective concentration and temperature of cleaning solution. By shortcuts and improved methods, he sought to reduce time and cost on every operation. Finally, he went through a full night shift with the cleaning crew—checking, observing, looking for more possible shortcuts.

It's how a typical Oakite Coordinated Sanitation program works. If you'd like it to work for you, call your local Oakite man. Meanwhile, write for free booklet on food plant sanitation to Oakite Products Inc., 26G Rector Street, New York 6, N. Y.

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Specify

WALWORTH PVC

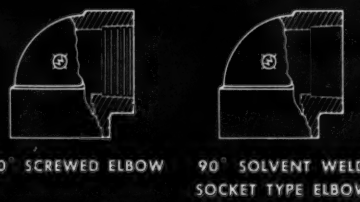
(rigid polyvinyl chloride)

Valves and Fittings!

Walworth plastic valves and fittings are made of non-aging, non-corrosive and non-toxic unplasticized rigid polyvinyl chloride (PVC). These products are highly resistant to chemical attack and offer the advantages of immunity to galvanic corrosion and high impact strength at temperatures as high as 150°F. Durable and light, Walworth PVC valves and fittings are simple to install, easy to maintain (no painting), and add a smooth, clean appearance to your piping system.

Walworth PVC Y-Globe Valves are designed to regulate the flow of alkalies, acids, and similar corrosive fluids. Walworth PVC Diaphragm Valves* are commonly used in systems handling corrosive fluids, especially those containing suspended materials, and can be furnished with diaphragms suited to your application.

*Hills — McCanna (Saunders Patent)



90° SCREWED ELBOW

90° SOLVENT WELD-SOCKET TYPE ELBOW

A complete line of Walworth screwed and solvent weld socket type fittings are available in sizes from ½" to 4" and include 45° and 90° Ells and Tees . . . flanges . . . plugs . . . bushings . . . straight and reducing couplings . . . screwed and flanged unions . . . caps . . . nipples.

SEND FOR THIS BOOKLET. It describes mechanical and thermal properties, working pressures, sizes and dimensions, application and assembly data for the complete line of Walworth PVC Valves and Fittings. Please use company letterhead.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

WALWORTH

750 Third Avenue, New York 17, New York

SUBSIDIARIES: ALOYCO ALLOY STEEL PRODUCTS CO. CONOFLOW CORPORATION GROVE VALVE & REGULATOR CO. SW SOUTHWEST FABRICATING & WELDING CO., INC. M&H M & H VALVE & FITTINGS CO. WALWORTH COMPANY OF CANADA, LTD.

6827 on Reader Service Slip

Scrub, damp dry floor at 12,500 sq ft/hr in one operation

One man operating newly-designed floor maintenance machine can lay cleaning solution, scrub, pick up dirty solution, and damp dry a 24" width swath in single pass. Or, by changing from scrubbing to polishing brushes (or steel wool pads), and by snapping on a dry pickup unit, operator can polish the 24" swath and pick up all loose dust and food particles on the floor.

The twin 13" brushes are driven by ¾ hp motor, vacuum unit by ¾ hp by-pass motor. Propane or gasoline powered models are available. Unit will clean 12,500 sq ft/hr.

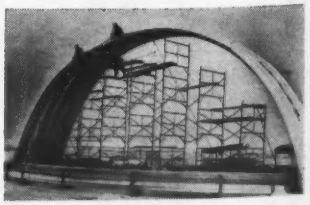
Convertamatic high-speed floor maintenance machine, available under finance and lease plans, is development of Advance Floor Machine Co., 4100 Washington Ave N, Minneapolis 12, Minn.

For more information circle 6828 on Reader Service Slip.

Dust can't roost

. . . in Rice & Powell's trussless grain bagging building

Only the floor needs to be kept free of dust in the new grain-bag loading plant of Rice and Powell Grain Co. The building, a pre-engineered trussless steel type, is located at the Port of Chicago and operated in connection with a grain elevator.



First sections of 82-ft long grain-bagging plant being fitted into position. Sides and roof are combined in one continuous arc

The building was erected in less than a week after the concrete slab had been

poured. It is arch panel in design, with a 63 ft unsupported roof span. Center of arch is 25 ft above floor level.

Ends of each panel are anchored in trenches at each side of the concrete foundation slab.

The building was put up without erection tools except portable scaffolds and holding jigs as seen in photo. Power wrenches bolted together the formed sheets. Only rust-resistant bolts and neoprene washers were used.

Arch panels, fabricated from 18-gage JalZinc, produced by Jones & Laughlin Steel Corp., 3 Gateway Center, Pittsburgh 30, Pa.

For more information circle 6829 on Reader Service Slip.

Trussless buildings manufactured by Wonder Building Corp. of America, 30 N. LaSalle St., Chicago, Ill.

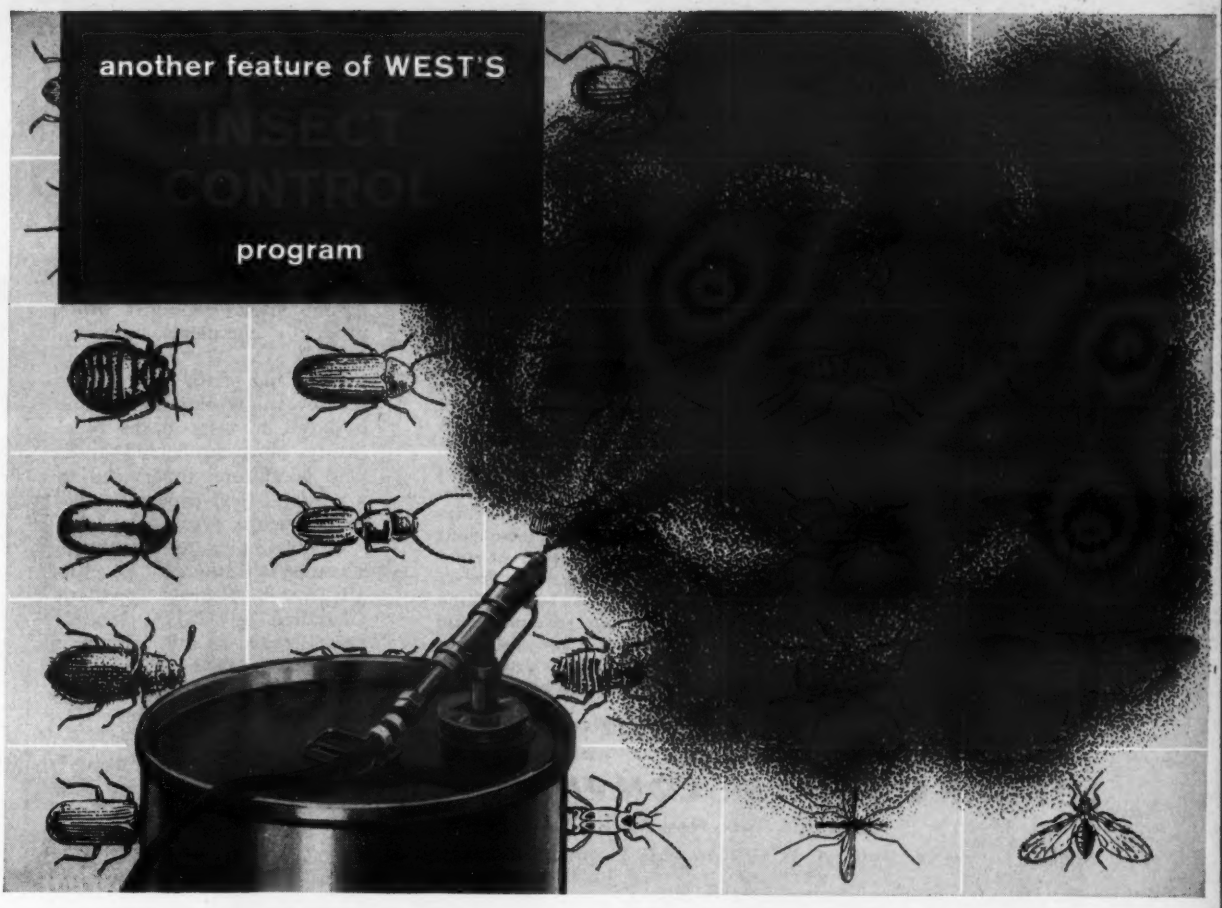
For more information circle 6830 on Reader Service Slip.

Temporary storage

Strong fabric, supported by air pressure, can be used as a low-cost, temporary warehouse. Mimeo data sheet describes features of structure, and experiences under varied weather conditions.

Data Sheet #6, 3 pg, is issued by CID Air Structures Co., 1501 E. 96th St., Chicago 28, Ill.

For your copy simply circle 6831 on Reader Service Slip.



SIMPLIFIED DRY FOGGING at lowest cost

You need only the drum fogging unit sketched above and compressed air to dry fog 100,000 cu. ft. of space with insecticide. The unit has been specially designed for high potency West Insecticides and is loaned without charge to purchasers. It fits any container from five to thirty gallons.

This is an example of how simple insect control can be with a scientific West Program. No special labor force is required. One man easily maintains the program in addition to other duties.

The West Insect Control Program offers a complete selection of equipment and insecticides:

Equipment includes everything from permanent installations to portables. All fogging units have exclusive suction spray nozzles that produce a dry fog of droplets within the optimum range of size for maximum kill and coverage.

Insecticides range from the highly economical Vaposector for space and contact spraying to residual sprays, other specialized contact sprays and fumigants. Quality and effectiveness are insured by chemical controls and insecticide testing in West's Entomological Laboratory.

A West Specialist will be glad to make a survey and suggest an Insect Control Program tailored to fit your needs. No obligation. Just mail the coupon.

Programs and Specialties for Protective Sanitation and Preventive Maintenance

WEST CHEMICAL PRODUCTS INC.

WEST DISINFECTING DIVISION

WEST CHEMICAL PRODUCTS INC., 42-16 West Street, Long Island City 1, N. Y.
Branches in principal cities • In Canada: 5621-23 Casgrain Ave., Montreal

☐ Please send your 32-page booklet, "Industrial Insect Control."

☐ Please have a West Representative telephone for an appointment.

Name_____

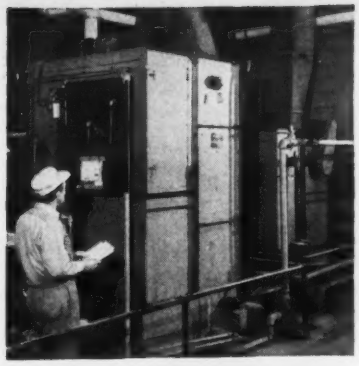
Position_____

Mail this coupon with your letterhead to Dept. 19

6832 on Reader Service Slip

DRY and CLEAN AIR at the RIGHT TEMPERATURE

- to control your product quality
- to protect a critical operation
- to protect apparatus from moisture damage
- to DRY your material or product
- to control packing or storage conditions
- to assure precision in testing or research
- to increase air conditioning capacity



Air Condition by the NIAGARA Method Using HYGROL Liquid Absorbent

This compact method, giving high capacity in small space, removes moisture from air by contact with a liquid in a small spray chamber. The liquid spray contact temperature and the absorbent concentration, factors that are easily and positively controlled, determine exactly the amount of moisture remaining in the air.

Most effective because... it removes moisture as a separate function from cooling or heating and so gives a precise result, and always. Niagara machines using liquid contact means of drying air have given over 20 years of service. The apparatus is simple, parts are accessible, controls are trustworthy.

Most reliable because... the absorbent is continuously reconcentrated automatically. No moisture-sensitive instruments are required to control your conditions... no solids, salts or solutions of solids are used and there are no corrosive or reactive substances.

Most flexible because... you can obtain any condition at will and hold it as long as you wish in either continuous production, testing or storage.

Write for Bulletins 112 and 131 and complete information on your air conditioning problem.

NIAGARA BLOWER COMPANY

Dept. FP-5, 405 Lexington Ave., New York 17, N. Y.

Niagara District Engineers in Principal Cities of U. S. and Canada

6833 on Reader Service Slip

EDMONT CASE NO. 626: Handling boxed fruit in a Michigan packing plant, canvas gloves lasted 1-½ days. Edmont recommended a new vinyl-impregnated glove with non-slip grip (No. 151 Werx). It wore 9 days, each pair handling an average of 675 tons of boxed fruit, for a 69% saving.

Werx glove outwore canvas 6 to 1

No. 151 Werx

In case above, the Edmont-recommended glove outwore canvas and reduced glove costs 69% because it fit the job. Its vinyl-impregnated fabric allows bare hand dexterity, provides a non-slip grip and even outwears expensive goatskin on many jobs. It keeps out dirt but lets the hands breathe, and is completely washable.

Free Test Offer To Listed Firms: We make more than 50 types of gloves. Describe your operation, materials handled and temperature condition. We will send samples of the correct glove for comparison testing on-the-job.

Edmont
JOB-FITTED
GLOVES

Edmont Manufacturing Company
1212 Walnut Street, Coshocton, Ohio
In Canada write MSA, Toronto

6834 on Reader Service Slip

To get more information on products—use the Reader Service Slip

opposite last page

sanitation

Roach killer, repellent has pleasant aroma

Concentrated liquid insecticide with pleasant aroma not only kills roaches on contact, but repels those roaches which may appear later. Aroma masks all odors which product's chemicals may develop.

Repelling effect carries over for several weeks. This result is based on tests in the laboratory, later duplicated under field conditions supervised by a national food processor. Detailed results are available.

Composed of pyrethrins, piperonyl butoxide, essential oils, and Butral repellent. Classified by USDA, Insecticide Branch, as safe for use in food plants.

Run Roach is product of Lester Laboratories, Inc., P.O. Box 4897, Atlanta 2, Ga.

For more information circle 6835 on Reader Service Slip.

Portable spot applicator holds liquid fumigant, dispenses it as mist

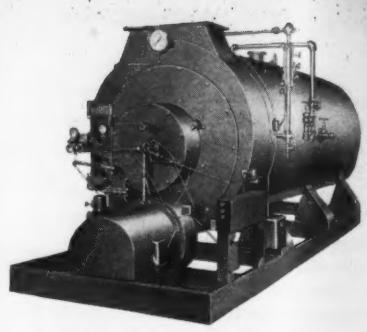
Uses: To control insect infestations in enclosed conveying equipment.

Features: Portable applicator holds gasifying liquid fumigant

With tank pressure of 35-50 psi, about 1 oz fumigant is discharged every 6 seconds

which is dispensed as vapor. This method affords fast penetration into cracks, crevices, and seams of conveyors of flour, grain, and other ingredients.

Description: Unit consists of 5-gal, stainless tank equipped



Here's CYCLOTHERM'S 3-WAY CUT in STEAM PROCESSING COSTS!

If you process by steam, use steam by Cyclotherm. You cut costs in these three vital ways:

FUEL COSTS

Cyclotherm Cyclonic Combustion means just what it says—controlled fuel and air, whirling at 200 mph, forming a cyclone in the furnace! This high velocity burning assures maximum efficiency in combustion and heat transfer, resulting in lower fuel consumption.

MANPOWER COSTS

A fire without a fireman! Electronic controls operate the Cyclotherm safely and automatically. Smaller models cycle on and off as steam is required. On larger models, precision modulation coordinates the fuel-air ratio to the load demand, from 30% to 100% of rated capacity.

INSTALLATION AND MAINTENANCE COSTS

Cyclotherm is factory assembled and factory pre-tested. All you do is make five simple connections. 50% maintenance savings are not uncommon. Return tubes cleaned in minutes with no removal or replacement of refractories. No standby unit needed.

And remember—one-third smaller than ordinary generators of similar capacity, a Cyclotherm fits almost anywhere. Many plants have installed two Cyclotherms for utmost flexibility and power. Burns gas or oil with quick changeover. 18 to 500 hp, 15 to 200 psi.

YEARS AHEAD IN STEAM GENERATION
CYCLOTHERM
STEAM AND HOT WATER GENERATORS

Cyclotherm Division,
National-U. S. Radiator Corp.
60 E. First St., Oswego, N. Y.

Please send me a free copy of your booklet giving full information on Cyclotherm Steam and Hot Water Generators.

Name.....
Company.....
Address.....
City..... Zone..... State.....

6836 on Reader Service Slip

Accidents cost more than

ALCOA ABRASIVE TREAD PLATE

An employee slips on a greasy floor and twists his knee. A severe, chronic inflammatory condition results. Medical costs and Workmen's Compensation total $10,553.77. The employer's accident rate is up. Production time is lost while a new man is trained.

This is just one of 20,000 avoidable slipping accidents in industry every year. Alcoa® Aluminum Abrasive Tread Plate with lasting slip-proof qualities prevents such accidents. Tough particles of fused aluminum oxide in its abrasive surface stay slip-proof even when wet, oily or greasy. It is the only nonskid floor surface that gives you the advantages of corrosion resistance and light weight.

Learn how you can eliminate hazardous conditions on floors, stairs, ramps and other areas. Check the coupon below; write Aluminum Company of America, or call your nearest Alcoa distributor.

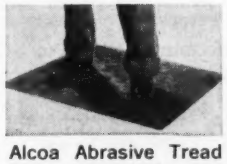
Make Your Own 30-Second Safety Test . . . Check the Coupon for FREE Sample of Alcoa Aluminum Abrasive Tread Plate.

ALCOA ALUMINUM

Your Guide to the Best in Aluminum Value

"ALCOA THEATRE"

Exciting Adventure, Alternate Monday Evenings



Alcoa Abrasive Tread Plate gives a safe, sure grip—even when wet, oily or greasy.

Aluminum Company of America
1664-E Alcoa Building
Pittsburgh 19, Pennsylvania

I'd like to see how Alcoa Abrasive Tread Plate prevents slipping. Please send me FREE sample—also application, design and fabricating data.

Name and Title_____
Company_____
Address_____
City and State_____

6837 on Reader Service Slip

with stainless braided discharge hose lined and covered with vinyl (resistant to corrosive fumigants). Other features are safety valve, Teflon gaskets, safety top filler opening, pressure gage, and auto tire valve for pressurizing tank.

Spot Fumigant Applicator is development of Product and Equipment Dept., Arwell, Inc., 1119 Glen Rock Ave., Waukegan, Illinois.

For more infomation circle 6838 on Reader Service Slip.

Protects surfaces, walls from food acid damage

Uses: Plastic resin protects floors, walls, ceilings, equipment from acid attack. Surfaces can be made skid-proof.

Resin seals production areas from damage by water, steam, strong cleaning compounds

Features: Material hardens overnight into a dustless, leather-tough film that has been shown not to chip even when "feathered". Under heavy traffic, ⅛" of resin outwears 2" of concrete.

Description: Amazite is made in three formulations—for trowel, paint brush, and spray gun applications. May be applied over new or old concrete, terrazzo, brick, stone, marble, slate, plaster, metal, or wood.

Thick applications may be trowelled on to transform rough, pitted floors into smooth areas. Surfaces in good condition may be protected by brushing on the resin.

Amazite is product of The Hallemite Mfg. Co., 2446 W. 25th St., Cleveland 13, Ohio.

For more information circle 6839 on Reader Service Slip.

Start where old-style vacs finish

ALL-NEW General

Heavy Duty Wet and Dry

E-Con-O-Vac Vacuums

Revolutionary New
Faster, Better Cleaner!
Quality-engineered for long life

In 3 basic job-suited models

You Get All This!

Full swivel hose connection✓Both intake and exhaust openings in head✓Durable cast aluminum head✓Recessed "out-of-the-way" carrying handles✓Big heavy duty resilient wheels✓For both wet and dry pickup, with no changes necessary✓Dual use — as vacuum, and powerful blower✓ Convenient push-pull handle✓ New, more powerful motors✓New, quick snap-on floor tools and other accessories✓Convenient tool basket.

GENERAL
Quality-Engineered Floor Machines In *all* sizes for *all* types of floors

BEFORE YOU BUY, SEE GENERAL! There's a BIG difference in floor maintenance equipment!

General FLOORCRAFT, INC.
421 Hudson St., New York 14, N. Y. Established 1930
World's Most Complete Line of Industrial and Household Floor Maintenance Machines and Vacuums
All Sizes for All Types of Floors — Made by Floor Machine Specialists

DON'T WAIT — AUTO-MATE your floor maintenance! Mail coupon for details.

( ) Have Distributor call on us.
( ) Send complete information, literature and prices.

COMPANY_____
STREET_____
MY NAME_____ TITLE_____
CITY_____ STATE_____
FP-5

6840 on Reader Service Slip

NEW! direct tank-mounted LIQUID LEVEL TRANSMITTER

Exclusive static pressure connection for closed vessels above or below atmosphere . . . eliminates need for second instrument.

This sensing diaphragm capsule flange-mounts directly on side of tank. All wetted parts of Type 316 stainless steel, with optional plastic coating for further corrosion protection.

with DIRECT 3-15 psi air output signal

IDEAL FOR: Evaporators and other process vessels containing highly viscous or corrosive fluids, slurries, and solids-in-suspension.

Now you can measure the level of any "difficult" or easy-to-measure fluid — economically, without the complication of floats or bubble tubes, and with *sustained high accuracy over the entire range span.*

Flange-mounted directly to the side of an open or closed tank, the Type 13FA Transmitter eliminates piping and purging. Its stainless steel diaphragm capsule senses level changes instantly. Conventional tubing leads its output air signal directly to standard 3-15 psi receiver-recorders and controllers without need for intermediate signal converters.

Wherever level measurement is a problem, the 13FA provides an accurate, trouble-free solution. Write for detailed information, or ask your nearby Foxboro Field Engineer to explain its application to your specific process. The Foxboro Company, 925 Neponset Ave., Foxboro, Mass., U.S.A.

FOXBORO
REG. U.S. PAT. OFF.
LIQUID LEVEL TRANSMITTERS

6841 on Reader Service Slip

sanitation

No deep chipping needed before patching floor

Packaged material applied after merely wirebrushing to remove loose particles

Features: Material to patch food plant production floors can be applied after wirebrushing area to be resurfaced. Material, named Chemi-Patch, can be feather-edged and applied as thinly as ⅛". When dry, patch will not absorb grease, fats, or bacteria.

After application of smoothing agent, patched area takes light traffic in 18 to 24 hr; heavy traffic in 36 hr

Description: Chemi-Patch is marketed in a sealed 2½-gal container, containing the aggregate in plastic bag, along with three cans which contain catalyst, binder, and smoothing agent. To apply, binder and catalyst are first mixed, then aggregate is added. After material is troweled on, smoothing agent is applied with ordinary paint roller.

Chemi-Patch is product of The Garland Co., 3748 E. 91st St., Dept. C-45, Cleveland 5, Ohio.

For more information circle 6842 on Reader Service Slip.

V-belt drive manual

Information on selection and operation of V-belt drives is detailed in 108-pg file-size manual. Engineering drawings and exploded views illustrate technical sections.

"V-belt Drives", Bul A661 is published by Dodge Mfg. Corp., Mishawaka, Indiana.

For your copy simply circle 6843 on Reader Service Slip.

Powered-roof ventilators

Power ventilators for roof and outside wall (exhaust or supply) are detailed in series of three bulletins.

Photos, cutaway drawings, and engineering sketches show features of each model, and available accessories.

Bulletins 1905, 2301, and 2700 describing various "Power Roof Ventilators" are issued by ILG Electric Ventilating Co., 2850 N. Pulaski Rd., Chicago 41, Ill.

For your copy simply circle 6844 on Reader Service Slip.

Stainless hose nipples

Type 316 stainless steel hose nipples are now available to food processors in 5 sizes—¼, ⅜, ½, ¾, and 1 inch. Made by Bandit Co., 4777 Dahlia St., Denver 16, Colo.

For more information circle 6844A on Reader Service Slip.

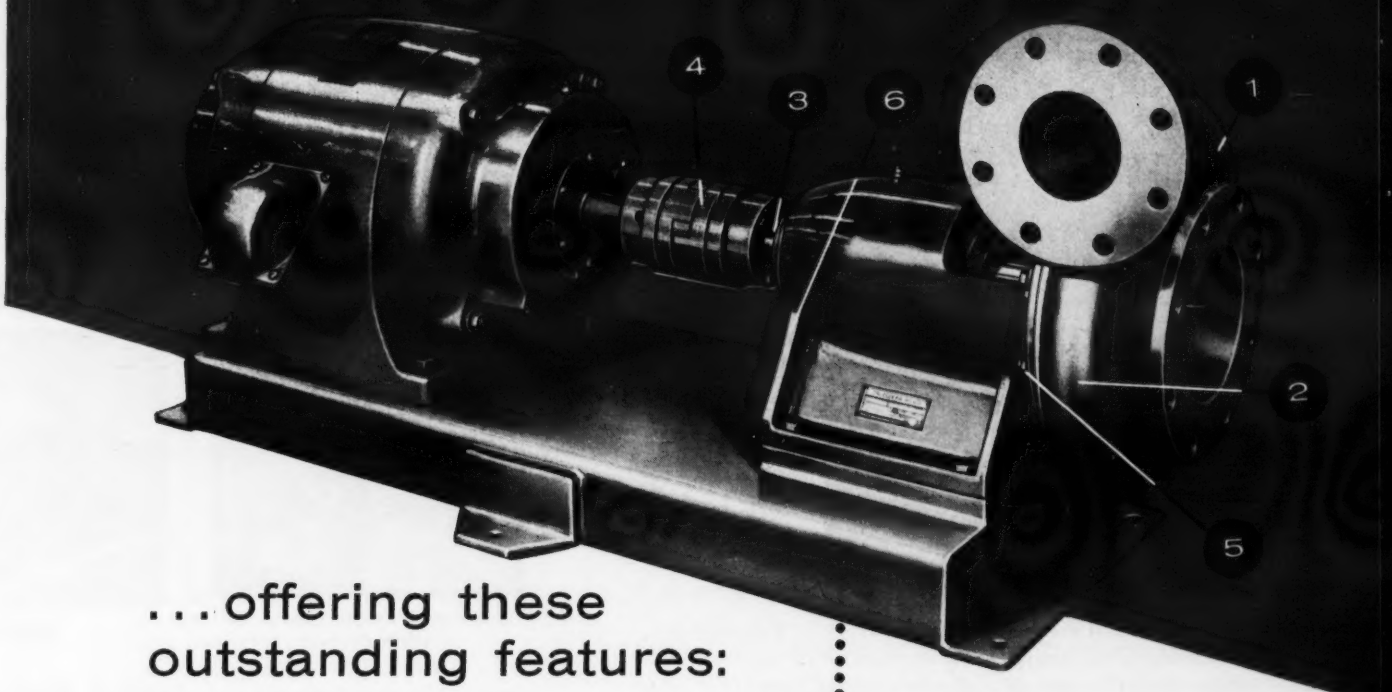
For more information on product at right, circle 6845 see information request blank opposite last page.

TRI-CLOVER

presents an *ALL-NEW* series of

INDUSTRIAL *Centrifugal* PUMPS

for dependable corrosion-resistant service

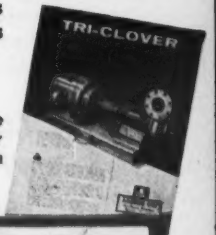


. . . offering these outstanding features:

1. *Volute type case* . . . specially designed heavy duty pump head gives maximum conversion of velocity to pressure energy, with high efficiency. Pump head swings 360 degrees.
2. *"Francis" type impeller* . . . produces lower pressure at shaft sealing surface—minimizes danger of impeller clogging.
3. *Precision-machined shafts* . . . minimize possibility of deflection or vibration. Over-sized ball bearings insure long, trouble-free operation.
4. *Spacer type coupling* . . . allows removal of complete pump rotary assembly, including impeller and frame, without removal of base or disturbing piping or electrical connections.
5. *Exclusive backplate design* . . . accommodates either packing gland or mechanical seal stuffing boxes, which can be easily interchanged in the field.
6. *Rigid one-piece frame* . . . of cast iron, has oversized pocket for collecting any leakage from stuffing box, and can be piped to drain away from pump.

For over 35 years, Tri-Clover Division has specialized in the development and manufacture of high quality corrosion-resistant centrifugal pumps. Now, to further extend this pump line, and to meet more highly specialized pumping requirements, Tri-Clover presents an entirely new series of high efficiency centrifugal pumps.

This new series of Industrial Stainless Steel Pumps is offered in a full range of sizes and seal styles, including models to operate at temperatures of minus 80° F to plus 400° F.



SEND FOR BULLETIN

For the full story on these new pumps, write for a copy of the new Pump Bulletin 258-I.

TRI-CLOVER

LADISH CO.

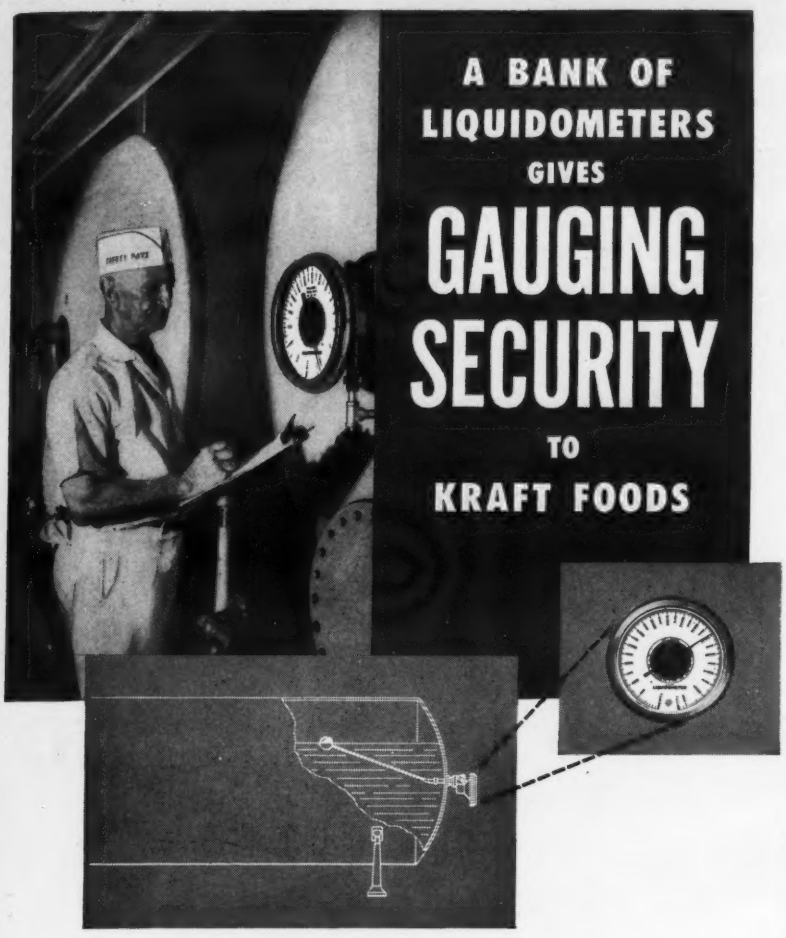
Tri-Clover Division

Kenosha Wisconsin

In Canada: Brantford, Ontario

Export Department

8 So. Michigan Ave., Chicago, U.S.A. (Cable TRICLO)



A BANK OF LIQUIDOMETERS GIVES

GAUGING SECURITY

TO KRAFT FOODS

At the Kraft Foods plant in Hillside, N. J., Liquidometer gauges supply an accurate, reliable measure of vegetable oils which are fed into the Kraft food processing system.

The gauges used by Kraft are 12" direct readers. Their function: gauging the contents of the 24 tanks in which Kraft stores vegetable oils at 100-120 degrees F. The slightest change in liquid level is instantly and automatically transmitted to a large, easy-to-read dial. Inventories are accurately maintained with a minimum of effort.

Liquidometer direct readers are available with automatic warning signals where certain liquid levels are critical. Dependability, low maintenance, high readability, safety and ease of installation ideally suit Liquidometers for every liquid gauging need.

A variety of dial type Liquidometer gauges are available for direct and remote indication. For complete details write Dept. G for Bulletin 463.

LIQUIDOMETER INSTRUMENTS

Liquids worth storing are worth measuring.

THE LIQUIDOMETER CORP.

SKILLMAN AVENUE AT 36TH STREET, LONG ISLAND CITY 1, N. Y.

6846 on Reader Service Slip

sanitation

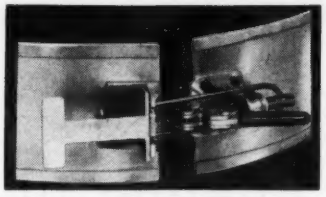
Aluminum frame electric motor now in new design

NEMA rerated electric motors are being built into all-aluminum alloy frames. Approximate 25% reduction in weight is effected, in comparison to cast iron. Motors, available either drip-proof or totally enclosed and fan cooled, are built by Reuland Electric Co., Alhambra, Calif.

For more information circle 6847 on Reader Service Slip.

Add quick-opening clamp to drum heater

Drum heater has been redesigned to include toggle clamp and built-in three-heat switch. Clamp allows heater, which facilitates content removal



Close-up of toggle clamp on drum heater

from 55 gal steel drums, to be applied and removed quickly from drums. Wire circuits assure uniform heating at either high, medium, or low setting.

RH-1 Acrawatt drum heater is product of Acra Electric Corp., 9909 Pacific Ave., Franklin Park, Illinois.

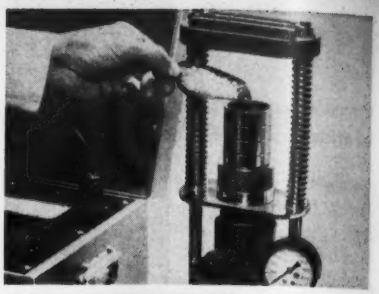
For more information circle 6848 on Reader Service Slip.

Odorless, fungicidal paint for wet surfaces

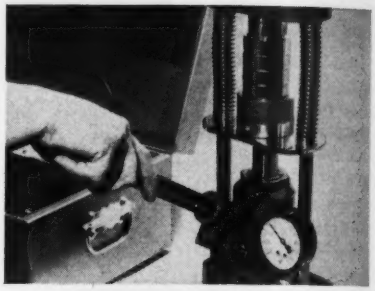
Presence of water actually accelerates drying of odorless type paint, which has been successful in meat packing room demonstrations. Contains no lead.

Formula 66 is development of Fungicidal Products Co., 410 Elgin Ave., Forest Park, Illinois.

For more information circle 6849 on Reader Service Slip.



FEED IT...



SQUEEZE IT...

READ IT...

G-5 Moisture Register for accurate moisture tests in 60 seconds

Fastest moisture test available with accuracy to 0%. Save production and lab time—no skilled labor needed. Use Electronic Moisture Register G-5 anywhere on granular, ground, loose, shredded and powdered materials. Hydraulic pressure assures homogeneous sample. Specially calibrated for starches, flours, meals, sugars, feeds, coffee, yeast, baking mixes, cereals, vegetable oil products, cookies, crackers, dry grains, dried eggs, dehydrated foods, walnuts, corn products, parmesan cheese, many more. Accuracy guaranteed. *Ask for free trial.*

Write, stating material to be tested, and moisture range, or check No. 6950 on reader service card.

ELECTRONIC MOISTURE REGISTER Instruments

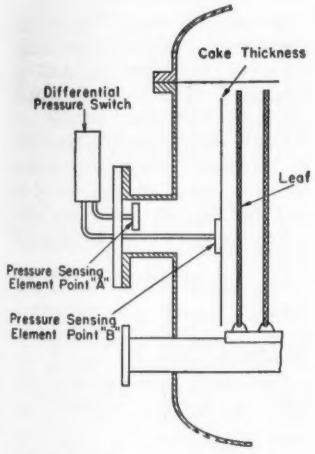
Moisture Register Co., Dept. FP
P.O. Box 910, Alhambra, Calif.

6850 on Reader Service Slip

Eliminating guesswork in filter cake thickness determinations, recently developed detector-indicator serves as primary monitor,

Permits fully automatic control of filtration

Uses: Indicating when filter cake in leaf-pressure filters has reached a predetermined thickness. Indication of cake thickness closes circuit which will sound an alarm. Instrument will take filter off line automatically and into clean cycle by means of remote control device.



▲ Schematic of instrument installed on leaf pressure filter. Fully automatic control is possible by combining unit with previously available equipment

Features: Cake thickness detector makes automatic filtration possible. It eliminates problem of exceeding solids capacity of filter leaves, with bridging, and subsequent damage to filter elements.

Instrument will provide positive control of cake thickness. Since flow and pressure in leaf-pressure filters can be measured and controlled by conventional equipment (clarity being measured by turbidity meter) instrument makes it possible to have primary monitor of remaining process variable, cake thickness.

Because instrument prevents overloading, filters can be sized more accurately for job. Reduction of filter size in many installations can be as much as 50%. By combining smaller size with automatic filter cycle, operators can reduce not only initial cost but operating costs.

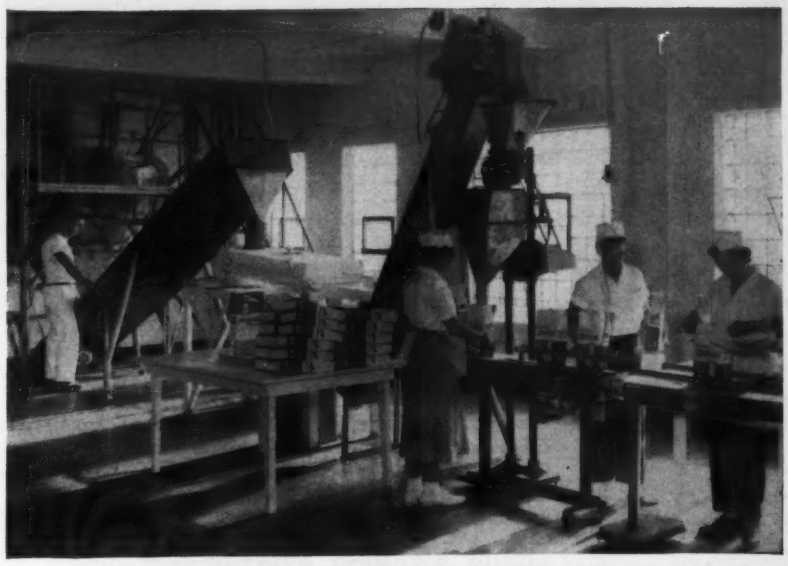
Description: Unlike conventional methods which measure cake thickness by differential pressure across complete filter, detector-indicator works by differential pressure at two specific points.

Pressure sensing point A (see diagram) is pressure of filter tank. Pressure sensing point B is pressure slightly inside filter cake. Pressures are identical during early part of filtration cycle. Cake thickness increases until element at B is slightly embedded in filter cake and senses a lower pressure. Differential pressure switch, comparing these two pressures, closes an electrical circuit to begin next step in filter cycle. Switches are sensitive to a differential as low as 10" of water head.

Two diaphragm pressure-sensing elements filled with silicone oil are used. Elements can be fabricated to meet any conditions of temperature or corrosive process materials.

Cake Thickness Detector is manufactured by The Duriron Co., Inc., Findlay & Thomas Sts., Dayton, Ohio.

For more information circle 6851 on Reader Service Slip.



The Instantizing and packaging line at the Farmers Coop Creamery in Ogilvie, Minnesota. Their nonfat product KWIK-LAC is active and successful in the Midwest consumer market.

You don't have to be big to produce instant milk...

But your profits will grow as soon as you go into INSTANT.

Instant milk powder is produced simply and economically with the Blaw-Knox Instantizer. Critical spray drying operations are not necessary to produce an "instant" product. Now, with new advances in the Blaw-Knox Instantizer you can produce a durable powder, free of product deterioration. True instantability with no off-flavor is gained by holding heat, moisture and process time to the minimum.

The Blaw-Knox Instantizer is effective on nonfat milk, chocolate blends, cocoa, and many other products which might require a low bulk density.

Specialty products earn premium prices.
Let Blaw-Knox experience work for you.

BLAW-KNOX

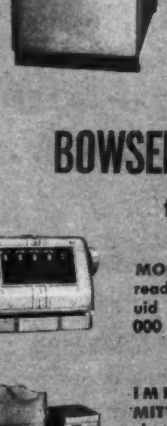
BLAW-KNOX COMPANY
Dairy Equipment Division
28 North Walnut, Mora, Minnesota

6852 on Reader Service Slip

HOW BOWSER Liquid Handling SYSTEMS CUT COSTS

WITH AUTOMATIC CONTROL AND GREATER ACCURACY

Automate your metering, batching or blending operation with a Bowser liquid control SYSTEM . . . and get these BENEFITS . . . lower initial investment . . . completely automatic control . . . unsurpassed accuracy . . . increased efficiency . . . single source of supply . . . and system performance guaranteed by Bowser, Inc.



Rate of Flow Controlling System

The Figure 417 Rate of Flow Controller is a completely self-contained system enabling fully automatic and accurate CONTROL of the rate of liquid in flow . . . to better than ¼ of 1% accuracy. Handles flow rates from ½ G.P.M. to 250 G.P.M.

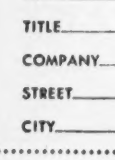
Liquid Blending System

The Figure 413 Precision Blending System automatically and accurately blends two or more liquids in closed, continuous production. Accuracy within ¼ of 1% and completely automatic operation . . . assures uniform blend . . . reduces blending costs by 50%.

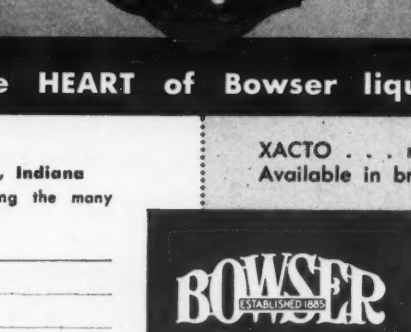
BOWSER METERS AND ACCESSORIES . . . offer complete systems for every type of liquid control requirement

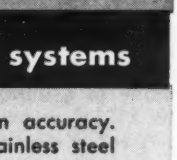
MODEL L . . . straight-reading dial records liquid metered up to 100,000 gallons.

IMPULSE TRANSMITTER . . . transmits electrical impulses to a remote counter which records quantities, controls automatic batching.

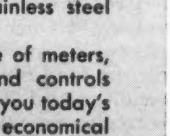


MODEL K . . . Printing Dial provides printed records of quantities metered for inventory control, etc.

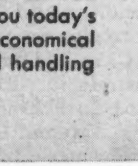




MODEL F . . . relays voltage signal to a remote flow indicator or controller permitting remote observation and control of the flow rate.



MODEL RP . . . automatically delivers repeated predetermined quantities of liquids.



REMOTE PREDETERMINING COUNTER . . . records electrical impulses from meter permitting automatic delivery and shutoff control for predetermined quantities.

XACTO METER . . . the HEART of Bowser liquid handling systems

Mail to BOWSER, Inc.

1304 E. Creighton Ave., Fort Wayne, Indiana

Please send complete information illustrating the many types of Bowser systems available.

NAME_____

TITLE_____

COMPANY_____

STREET_____

CITY_____ STATE_____

XACTO . . . meters assure precision accuracy. Available in bronze, iron and all stainless steel construction.

Bowser's full line of meters, accessories and controls combine to offer you today's most automatic, economical and modern liquid handling systems.

BOWSER ESTABLISHED 1885

6853 on Reader Service Slip

Records weights in motion automatically, accurately

Multi-scan unit provides a means of accurately and automatically recording weights of loads that do not come to rest, due to vibration, swinging on carriers, or other causes.

View of some components used with unit for recording weights-in-motion

Overhead truck scale, as shown in photo, has total capacity of 1200 lb and is equipped with a direct digital scanner. Scanner reads off weights and transmits them to an electric computer, which takes a total of ten weights and divides by ten. This average is accurate weight of load.

Multi-scan unit with direct digital scanner is manufactured by Toledo Scale Co., Toledo 1, Ohio.

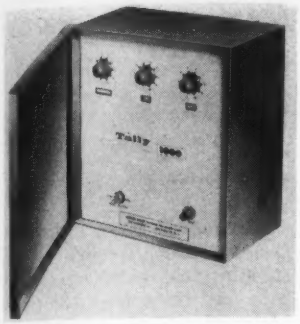
For more information circle 6854 on Reader Service Slip.

Serves as control on varied operations with counting rate up to 450/min

Pre-determined counter may be used where accurate, positive counting is required for such operations as packaging, batching, cutting of specific lengths, etc.

Counting at a rate up to 450/min, unit is easy to use since operator sets desired selectivity directly by means of selector switches. Count is always exact since false counts are eliminated by an exclusive circuit.

A special feature of counter is recycle on command switch. This allows operator to stop counter from recycling auto-



Counter can be reset to zero only when operator presses reset button

matically although it will stop at the end of each counting operation.

Counter is mounted from the back vertically. It is 10″ wide x 12″ high x 6″ deep, and operates on 115v or 230v, at 60 cycles ac.

Pre-determined counter (Tally 1000) is manufactured by Hobson Miller Machinery Corp., 280 Lafayette St., New York 12, N. Y.

For more information circle 6855 on Reader Service Slip.

Proceedings of meeting on instrumentation

"Proceedings of Pilot Clinic on New Instrumentation for In-stream Food Analysis" is now available. Book is divided into two sections — the food viewpoint, and the instrumentation viewpoint.

Food viewpoint covers dairy products, concentrated citrus foods, cereal and bakery products, meat products, and heat stabilized foods.

Instrumentation viewpoint covers nuclear magnetic resonance, ionizing radiation techniques, ultrasonic measurements, gas chromatography, color measurements, and infrared spectroscopy.

Book also contains photos, diagrams, and tables, as well as a list of those in attendance at the clinic.

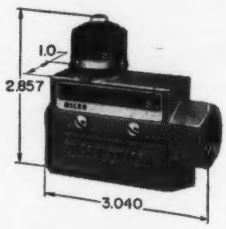
"Proceedings of the Pilot Clinic on New Instrumentation for In-stream Food Analysis", 81 pages, may be obtained by remitting $5.00 to FIER, 527 Lexington Ave., New York 17, N.Y.

H MICRO SWITCH Precision Switches

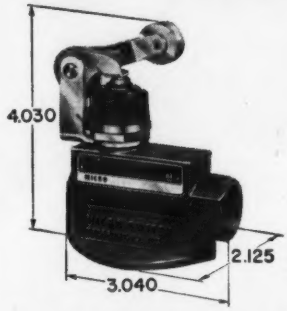
New "E6" and "V6" Enclosed Switches available in 6 actuator designs

With new ease of installation, improved insulation and sealing, heavier wall sections without change of envelope dimensions, these new switches are interchangeable with our "E" and "V" designs.

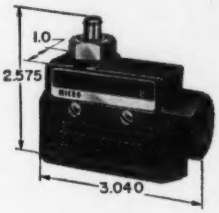
Available in six integral actuator designs to meet most precision switch requirements. All six are available in either side mounting (E6) or bottom mounting (V6) style.



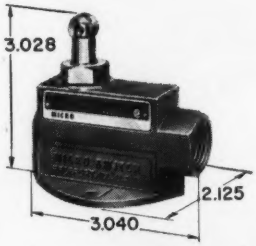
Plunger actuator for straight, in-line operating motion with controlled overtravel. Elastomer actuator boot protects against dirt and moisture.



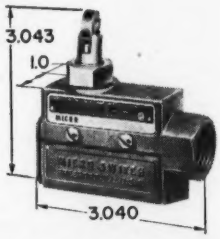
Roller lever actuator for cam or slide motion, adjustable horizontally through 360°, vertically through 225°. Elastomer actuator boot.



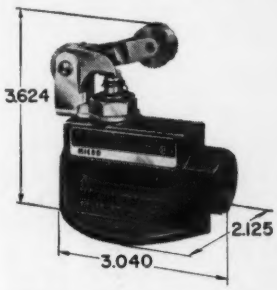
Plunger actuator for straight, in-line operating motion with controlled overtravel.



Roller plunger actuator for slow-rise cam or slide motion with controlled overtravel. Roller in line with case.



Roller plunger actuator for cam or slide motion with controlled overtravel. Roller at 90° angle to case.



Roller lever actuator for cam or slide motion, adjustable horizontally through 360°, vertically through 225°

New switch design lets terminal screws project from top portion of the housing. Wiring is easy. Gasket and insulator are one-piece, cemented to bottom housing . . . fewer parts, no separate gasket. The new elastomer insulator-seal provides better insulation and a tighter long-life seal. New housings have thicker walls and greater strength, yet have same outside dimensions and same mounting holes as "E" and "V" switches. New hex-shaped (instead of round) conduit hub greatly facilitates tightening conduit connection. Basic switch is replaceable in all cases.
Send for Data Sheet 145.

MICRO SWITCH . . . Freeport, Illinois, A Division of Honeywell

The two-word name MICRO SWITCH is NOT a generic term.
It is the name of a division of Honeywell.

Honeywell
MICRO SWITCH PRECISION SWITCHES

6856 on Reader Service Slip

Why external recalibration is important to users of industrial thermometers

Sometimes it is necessary to recalibrate thermometers in industrial installations due to severe shock from rough handling, or to calibrate for extreme accuracy at any point on the scale for special work range.

To recalibrate the ordinary bimetal thermometer, you must remove the dial glass and move the pointer by hand. You will achieve the desired recalibration of course, but a number of undesirable things may also result. First of all, the instrument's air-tight seal is automatically destroyed in the removal of the dial glass. Secondly, in forcing the pointer, the pointer shaft may become bent or twisted.

Should the pointer shaft become bent even slightly, it can cause the pointer to stick due to improper alignment of the bimetallic shaft on its bearing surfaces. The obvious result, of course, will be inaccurate readings and necessary repair or replacement of the instrument. *None* of these things can happen with the RMC external recalibration device.

A simple dial-reset screw, located on the back side of RMC industrial thermometers, permits recalibration without opening the instrument in any way. This external recalibration feature is *exclusive* with RMC, along with true dry-air hermetic sealing.

SHIPPINGPORT, Pa.—Heavy-duty dial thermometers play an important role in the operation of the world's first full-scale atomic-electric generating station devoted exclusively to civilian needs. These thermometers, manufactured by RMC, can be recalibrated externally. The plant is a joint project of Westinghouse Electric Corporation, Atomic Energy Commission and Duquesne Light Company of Pittsburgh.

RMC high pressure gauge, developed for missiles, now available to industry

RMC-LINDSAY PRESSURE GAUGES indicate pressures in ranges 0 to 1,000 psi., up to 0 to 15,000 psi., with retard scales available. Multiple coil, helical Bourdon tube type, with pointer attached direct—no linkages or pivots. Can withstand extreme shock, vibration, temperature, or overpressure and maintain consistent accuracy.

Write, wire or phone—tell us your requirements for indicating instruments, and let RMC engineering skill go to work for you. ROCHESTER MFG. CO.,1111 Rockwood St., Rochester 10, N. Y.

This maintenance engineer is recalibrating an RMC bimetal dial thermometer by means of the exclusive RMC *external* dial reset screw—a simple on-the-job operation with RMC thermometers.

RMC external recalibration device saves thermometer's hermetic seal

With this *external* dial reset screw you can recalibrate your RMC thermometer easily and safely, should it ever be necessary. The all-important hermetic seal cannot be destroyed and there is no chance for damage to the critical pointer shaft. You get the *only* bimetal industrial thermometer that provides for *external* recalibration when you specify RMC.

RMC

ROCHESTER MANUFACTURING CO., INC.
111 ROCKWOOD STREET • ROCHESTER 10, N.Y.

LIQUID LEVEL · TEMPERATURE AND PRESSURE INSTRUMENTS

REPRESENTATIVES IN ALL PRINCIPAL CITIES

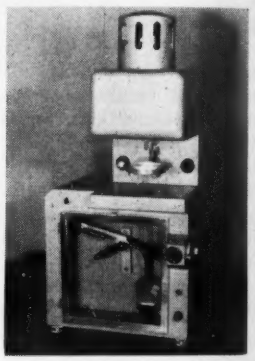
6857 on Reader Service Slip

fp QUALITY CONTROL

Measure moisture accurately, rapidly

- **Determinations within ±0.2% in six min**
- **Results stored until needed**

Instrument operates in two simple steps. To gain speed, samples are weighed directly into unit on a sensitive single pan unit. Thus, necessity of pre-weighing on a separate scale is eliminated. Sample weight is indicated on illuminated dial.



Sample is weighed directly into machine on the sensitive single pan balance

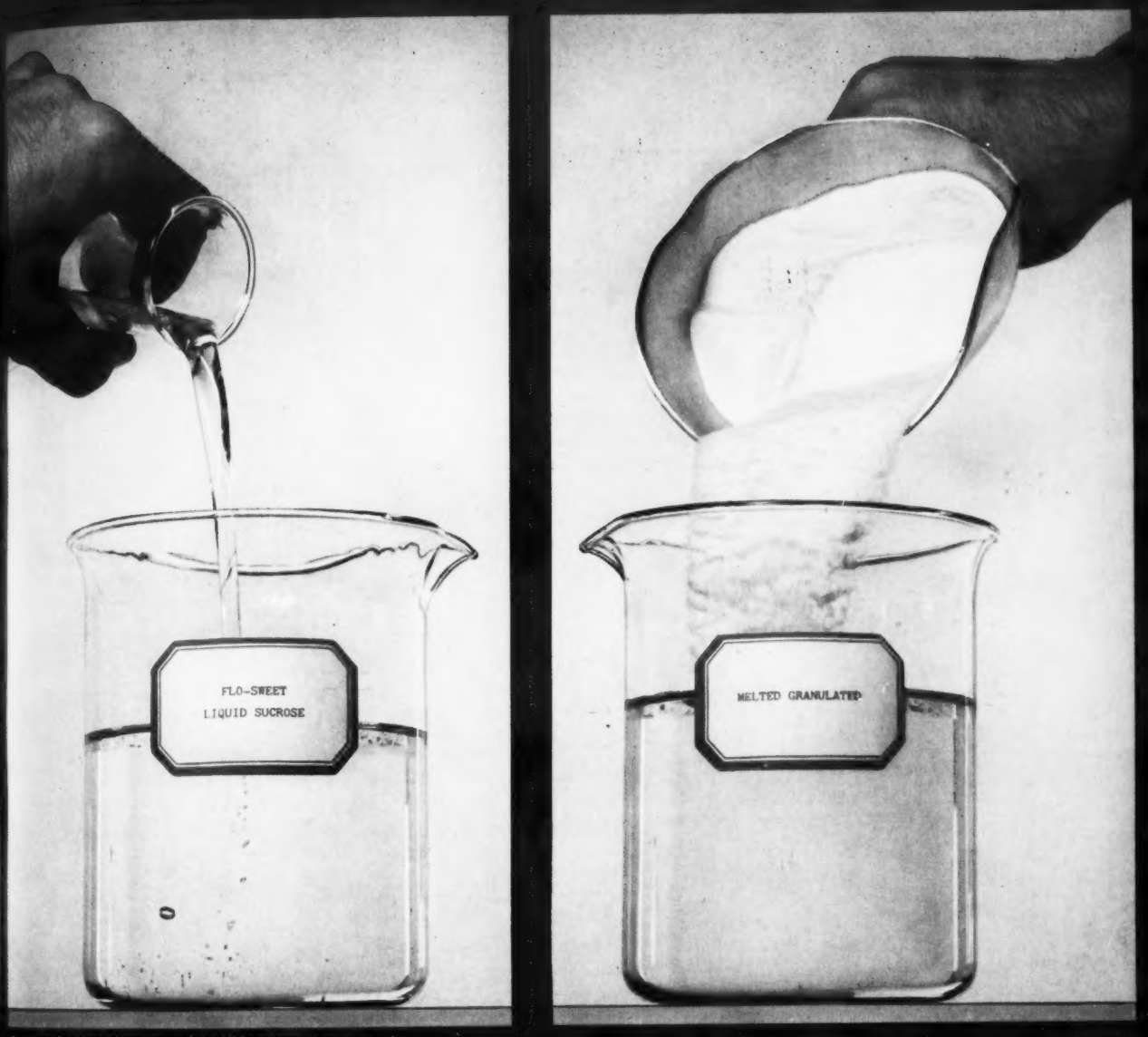
Operator then simply pushes a button, and the completely automatic cycle of drying, reweighing, and result computation is accomplished in six min. At end of test period, warning bell is sounded and final result is indicated on illuminated dial. Accuracy is better than ±0.2%.

Any unexpected interruption will not spoil a determination or a difficult-to-obtain sample. Results of moisture determination can be stored indefinitely until needed.

Ultra Rapid Moisture Tester is made by C. W. Brabender Instruments Inc., 50 E. Wesley St., South Hackensack, N. J.

For more information circle 6858 on Reader Service Slip.

For more information on product at right, circle 6859 . . . see information request blank opposite last page.



plates made direct from unretouched Ektachrome transparencies

TALK ABOUT SUGAR

You can't make a good liquid sugar by dissolving granulated sugar in water!

Nothing looks purer than the sparkling white crystals of granulated sugar. But when they are dissolved in water, as the photograph on the right shows, a certain amount of impurity or color shows up. And color is one good indication of sugar purity.

For more than a quarter century Flo-Sweet has been *the* pioneer in the development of a truly top quality liquid sugar. As the photograph on the left shows, Flo-Sweet today is so pure that it is hardly distinguishable in color from distilled water!

With today's trend toward higher and higher quality, only the best ingredients are good enough for the discriminating food producer. We invite you to compare Flo-Sweet with any other sugar, liquid or granulated, on any basis that you choose: color, taste, or laboratory analysis. We are confident that you will be impressed by the results.

For this is true sugar quality—You can see the difference.

FLO-SWEET

REFINED SYRUPS & SUGARS, INC.

YONKERS, NEW YORK

SERVING INDUSTRIAL SUGAR USERS EXCLUSIVELY FROM
YONKERS, ALLENTOWN, DETROIT, TOLEDO

Can specialized business publication advertising actually sell?

By reputation, salesmen are reluctant to credit anything but their own selling efforts for getting names on the dotted line.

Actually, it's quite a different story. The most successful salesmen will tell you two important things about selling. 1. That the selling process is largely a matter of communicating ideas. 2. And that specialized business publication advertising can help importantly to register information with prospects.

Of course each salesman will express this in his own way . . . but they all agree that selling would be far more difficult without the advertising that appears in the industrial, trade and professional publications that serve the specialized markets to which they sell.

Here, for instance, is what a salesman has to say about this kind of advertising:

Fred Snyder, Cleveland District
Worthington Corporation

sells to industry

Says Mr. Snyder:

"We have, of course, sales leads from our business paper advertising that are forwarded to us on a monthly basis. But also the trade advertising has its impact on many who do not at the time request specific information. Worthington is far better known today than it was five years ago, due in no small measure to the aggressiveness of its advertising and sales promotion department.

"Their work makes my job easier. First of all, we have an entree in companies where some Worthington products were not previously as well-known as our original line. We're getting a lot better sales coverage on all products. The Corporation manufactures so many products today that even regular customers may be unfamiliar with some of these products. Through trade advertising and sales promotion we have been able to sell the whole Worthington line.

"Getting back to sales leads—they are particularly helpful to our dealers. In Cleveland, W. M. Patterson Supply will undoubtedly receive inquiries from Worthington's advertising. Scott-Tarbell, Inc., Cleveland Oak Belting, or other dealers handling special product lines will pick up leads from our advertising to help them get business.

"I think we've grown eightfold since the war. This year we hit two hundred million. It used to be that twenty-five million was a good year. The advertising and sales promotion department has aggressively been attacking their part of the problem within the last five years. Prior to that the name Worthington was not nearly so well-known and we put much less emphasis on advertising."

Ask your own salesmen what your company's business publication advertising does for them. If their answers are generally favorable you can be sure that your business publication advertising is really helping them sell. If too many answers are negative it could well pay you to review your advertising objectives—and to make sure the publications that carry your advertising are read by the men who must be sold.

How salesmen use their companies' advertising to get more business

Here's a useful and effective package of ideas for the sales manager, advertising manager or agency man who would like to get more horsepower out of his advertising. Send for a free copy of the pocket size booklet entitled, "How Salesmen Use Advertising in Their Selling," which reports the successful methods employed by eleven salesmen who tell how they get more value out of their companies' advertising.

You'll find represented many interesting variations in how they do this. Some are very ingenious; all are effective. You can be sure that more of your salesmen will use your advertising after they read how others get business through these simple methods.

The coupon is for your convenience in sending for your free copy. Then, if you decide you want to provide your salesmen with additional copies, they are available from NBP Headquarters in Washington, at twenty-five cents each. Or, if you choose you can reprint the material yourself and distribute it as widely as you please. But first, send for your free copy.

NATIONAL BUSINESS PUBLICATIONS, INC.
Department 2E
1413 K Street, N. W.
Washington 5, D. C. STerling 3-7533

Please send me a free copy of the NBP booklet "How Salesmen Use Advertising in Their Selling."

Name _____

Title _____

Company _____

Street Address _____

City _____ Zone _____ State _____

National Business Publications, Inc.

NBP

. . . each of which serves a specialized market in a specific industry, trade or profession.

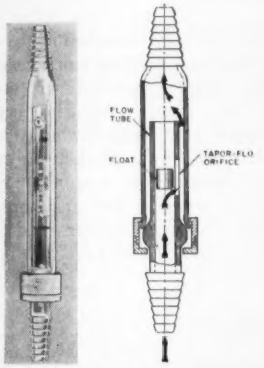
Indicates precise low flow rate

Operator may read exact flow values without visual averaging

All glass, variable area flow indicator, for measuring low flow rates, is designed primarily, for use in research laboratories, pilot plants, and bench-scale operations.

Unit incorporates a float which has great stability under fluctuating line pressures. The float lines out quickly, without bobbing, to permit exact reading of flow values without visual averaging.

As flow rate increases or decreases, float rises or falls in a precision-bore glass tube, proportionately exposing more

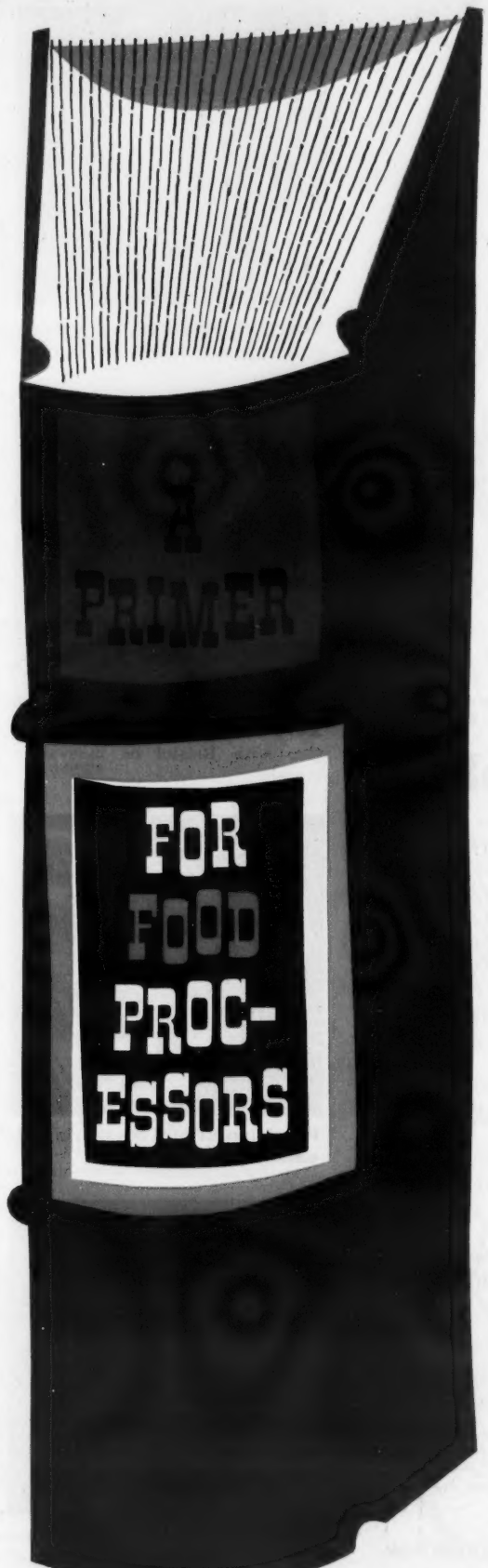


Glass flow meter has serrated end connections. Float is stably positioned in a precision-bore Pyrex tube. Schematic diagram (right) shows how fluid passes through meter, raising float to indicate flow rate

or less of a V-shaped orifice (See diagram at right of photo). Because this orifice is precisely shaped, float height is always directly proportional to flow rate. Flow value is therefore indicated on an

READER SERVICE

For more information on quality control described in these articles . . . use the convenient, self-mailing Reader Service Slip opposite the inside back cover.



What you should know about oxidative deterioration

What is oxidative deterioration?

In fats and in foods containing fats, oxidative deterioration is caused by the reaction of oxygen in the air with the unsaturated portion of the fat molecule. This reaction produces free peroxide radicals which, in turn, appear to trigger a lengthy chain reaction, the result of which is the formation of a variety of aldehydes, ketones and acids. Once started, the breakdown cannot be reversed. In fact, if allowed to continue, it proceeds at an increasing rate.

Why is it important to food processors?

Oxidative deterioration, unless checked, rapidly takes its toll of fat-containing food products in the form of rancidity. Nothing destroys the reputation of a food product so quickly as the pungent, tallowy odor and flavor characteristic of rancidity.

How can you control oxidative deterioration?

Oxidative deterioration can be effectively controlled with antioxidants. Added to oxygen-sensitive fats and fat-containing food products, these chemical compounds step in to check the rancidity-producing chain reaction referred to above. Since the reaction leading to rancidity cannot be reversed, antioxidants can only prevent further deterioration. Hence, it is essential that they be added as early in the processing of the food product involved as possible.

Which antioxidant is best for you?

The principal food-approved antioxidants in use today are butylated hydroxyanisole (BHA), butylated hydroxytoluene (BHT), and propyl gallate. All are available from Eastman, alone or in solution formulations containing various combinations and ratios of BHA, BHT and propyl gallate, with or without a metal chelating agent.

The most effective and economical formulation for use in any given food product depends upon such factors as the food itself, how it is processed, methods of distribution and storage, and types of packaging. Advice and assistance in selecting the best formulation for your specific requirements is available from the Eastman food laboratories.

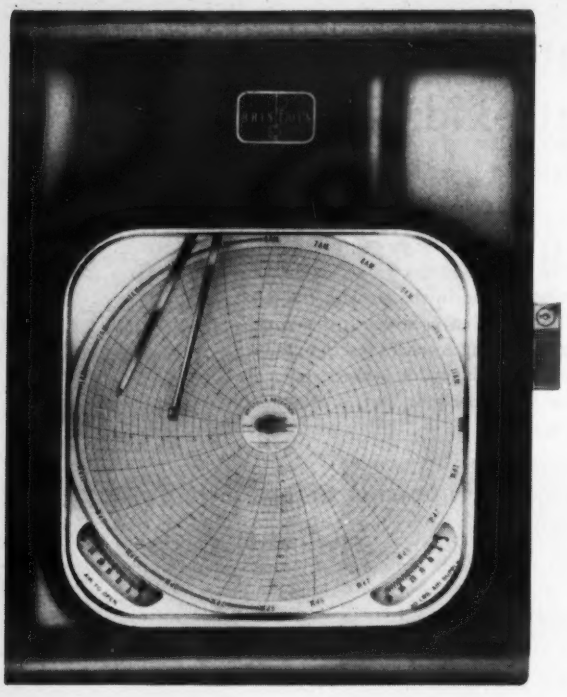
Where are these antioxidants available?

Marketed under the trade name TENOX, these food-grade antioxidants and the experienced technical service which backs up their proper use are available from Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Company, Kingsport, Tennessee.

Tenox **Eastman food-grade antioxidants**

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; New York; Framingham, Mass.; Cincinnati; Cleveland; Chicago; Houston; St. Louis. **West Coast: Wilson Meyer Co.,** San Francisco; Los Angeles; Portland; Salt Lake City; Seattle; Denver; Spokane; Phoenix. **Canada: P. N. Soden Co., Ltd.,** Montreal, P.Q.; Toronto, Ontario.

6860 on Reader Service Slip



Your newest man can operate and maintain this controller

He'll catch on quick to the Bristol Series 500 Controller without a complicated, lengthy training period.

In fact, your plant can have Bristol Series 500 Controllers, even if you don't have a formal instrument department at all. Many small instrument users are doing this today. Yet the 500's performance is such that one of the largest, most widely known chemical companies in the country just bought seventy 500's for its exacting processes.

Here are the big reasons the 500's a favorite with all instrument users, both large and small: (1) Basic simplicity of the operating mechanism; (2) Bristol measuring elements insure the utmost accuracy.

Another big simplification: You can exactly calibrate the Series 500 Controller with only one single adjustment, even after complete disassembly and reassembly with replacement of parts.

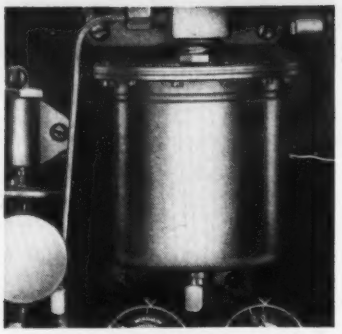
Get complete data on Bristol Series 500 Pneumatic Controllers now, before you order another instrument. Write for bulletin A 130, The Bristol Company, 143 Bristol Road, Waterbury 20, Conn. 8-19

Several hundred standard models meet every process requirement including:

These problems:	These operating modes:
1. Cascaded control	1. Fixed narrow band (on-off)
2. Selective control	2. Proportional—to 100% and to 30%
3. Ratio control	3. Reset with wide band—to 400%
4. Time program control	4. Derivative (rate)
5. Pneumatic Transmission	5. Reset plus derivative

BRISTOL TRAIL-BLAZERS IN PROCESS AUTOMATION
AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

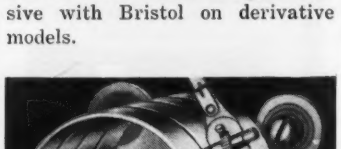
6861 on Reader Service Slip



Reset Action Stops (in cylinder), another Bristol exclusive on reset models.

Zero Derivative Setting, exclusive with Bristol on derivative models.

Precision Bristol Measuring Elements insure accuracy.



Built-in Calibration assures permanent accuracy of controller action.

evenly-graduated scale etched into side of flow tube.

Standard flow tube sizes are ¼" and ½" ID. Maximum operating pressure is 80 psi at 70°F, and maximum operating temperature is 150°F.

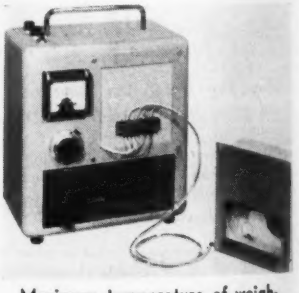
Since flow range depends on specific gravity of fluid, size of flow tube, and weight of float, other special size tubes and connections are available, as well as interchangeable floats of various materials.

Taper-Flo flow meter is manufactured by C-Mar Corp., 35 Euclid Ave., Manasquan, N. J.

For more information circle 6862 on Reader Service Slip.

Remotely controls weighing compartment located in oven

Weighing compartment of precision electrobalance comes out with removal of four screws, and may be controlled remotely through four wires while located in an oven. Measuring assembly remains outside for easy operation. Instrument can read directly in percent non-volatiles.

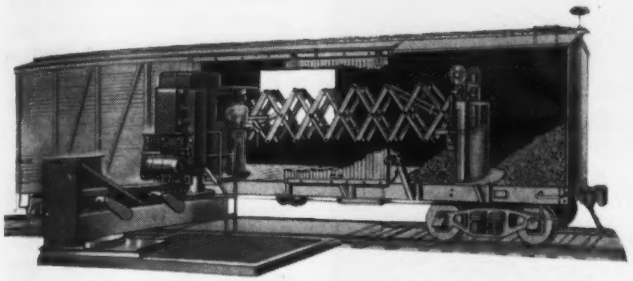


Maximum temperature of weighing compartment when operated remotely is 250°F.

Precision electrobalance is made by Cahn Instrument Co., 14511 Paramount Blvd., Paramount, Calif.

For more information circle 6863 on Reader Service Slip.

Production tests for pressure filling are detailed — page 41



Hydraulically actuated boom and scoop can be set on automatic operation during most of unloading cycle, freeing operator to dispose of grain doors, prepare next car, or ready car puller

Semi-automatic boom and scoop

Unloads 2 cars/hr at low cost/ton

- **Unloads any free-flowing materials**
- **Lower original operating costs than rotary or tilting car dumps**
- **One part-time operator**

Fast, efficient new method of unloading free-flowing materials from boxcars employs a hydraulically actuated swivel boom and scoop, mounted on a trackside foundation.

In the unloading operation, boom and scoop are swung into loaded boxcar. When first set in motion, scoop is in raised position.

Boom extends until scoop meets resistance in form of material or the car wall. This resistance causes scoop to dig down into the material. Boom retracts and pulls loaded scoop to open car door for discharge.

After discharging, scoop rises automatically, and the boom extends again to repeat the cycle.

Boom swivel and scoop actions can be operated automatically during much of the unloading cycle. This leaves operator periodically free to dispose of grain doors, prepare other cars for unloading, or ready a car puller to move the unloaded car away and get a loaded boxcar in position.

Operator can stop automatic cycle at any time to redirect the boom, or to withdraw the boom and scoop from the car. By having operator located on platform outside the boxcar, dangers of dust exposure and accidents are eliminated.

Records of extended operational tests at a large flour mill showed that the unloader completely empties grain cars in less than ½-hr/car.

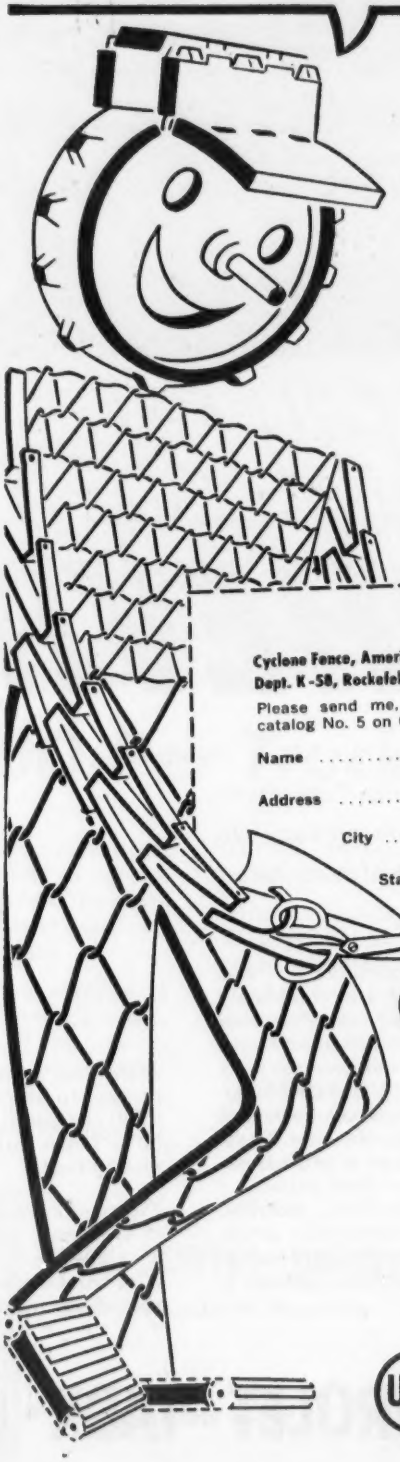
Flexibility of design allows for unloading operations on a

(*Continued on next page*)

Scoop swings into car on extended boom, maintaining raised position until it encounters material or car wall. Resistance brings scoop down into material with efficient digging and raking action

CY BELT says

"Let me show you how to save handling time!"



UNQUESTIONABLY it costs you time—and a lot of money—to move materials through your production line. Have you ever figured out how much time and expense you could save by eliminating as much manual handling as possible? A Cyclone Conveyor Belt representative will be happy to help you analyse your present methods, without obligation to you. And his suggestions will be tailored to *your* plant and *your* product. Cyclone Conveyor Belts are available in many sizes, designs and materials. We'd like to send you a free illustrated catalog showing Cyclone's complete line of belts. Just fill in the coupon.

Clip and Mail

Cyclone Fence, American Steel & Wire
Dept. K-58, Rockefeller Bldg., Cleveland 13, Ohio

Please send me, without obligation, a copy of your catalog No. 5 on Cyclone Processing Belts.

Name .....

Address .....

City .....

State .....

USS **Cyclone Metal Conveyor Belts** Spiral Woven Flat Wire Flex-Grid

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Cyclone Fence Dept.
American Steel & Wire
Division of
USS **United States Steel**

6864 on Reader Service Slip

(*Continued from preceding page*)

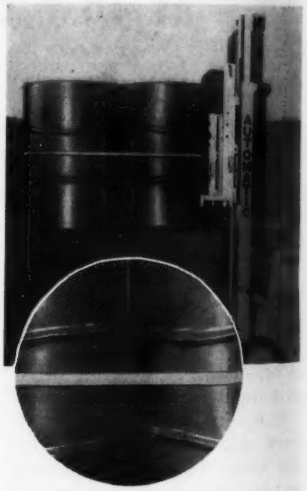
single or double parallel track system. When unit is in "out-of-service" position, there is allowance for standard rail clearance. Unit's foundation will not interfere with a track hopper or conveyor pit.

S-A hydraulic boxcar unloader is development of Stephens-Adamson Mfg. Co., Ridgeway Ave., Aurora, Ill.

For more information circle 6866 on Reader Service Slip.

Reduce denting to unitized loads of steel drums by designing . . .

Interlocking hoops



Development of interlocking arrangement to rolling hoops on 55-gal steel drums can lower damage of unitized loads. Drums with this design cost no more than conventional rolling hoops.

Photos show how hoops are slightly offset, alternately raised and lowered on opposite sides of drum. When steel strapped, drums are moved by standard fork truck.

Interlocking hoops result in reduced denting and deformation during transit. Rotating and vertical drum movement also is minimized.

Drums roll straight, can be reconditioned, and readily intermixed when stored with standard drums.

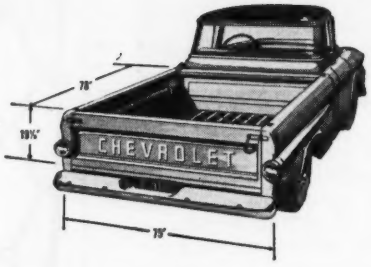
Uni-drums are development of Signode Steel Strapping

NEW FLEETSIDE BY CHEVROLET

Here's the new sweetheart of the Task-Force fleet, Chevrolet's new Fleetside pickup! No truck has ever been better to look at . . . or better for your business.

Long, sweeping lines, graceful body contours . . . *new* truck appearance that's fleet, dashing and completely modern! Yet there's even more to the new Chevrolet Fleetside than the striking beauty that first meets your eye. There's *size*, for instance: extra room inside to pack many additional cubic feet of payload. And with double-walled lower side panels, durable hardwood floor, and solidly constructed full-width tailgate, the new Fleetside is the toughest of pickup bodies, too! A new adjustable latch keeps graintight tailgate free from rattles.

Here's a new high in hard-working utility, matched by new styling that makes you stand out on any street. See the new Fleetside at your Chevrolet dealer's now! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.



More load space than any other comparable low-priced pickup. In lengths of either 78 inches or 98* inches and a full six feet in width, this new body actually provides 50% more cubic capacity than the conventional pickup box! **Optional at extra cost.*

Plenty of work-whipping hustle and muscle. Your choice of two great engines—standard 145-h.p. Thriftmaster 6 or optional at extra cost 160-h.p. Trademaster V8. And truck-engineered chassis components will take all the abuse your most bruising hauls can give them!

CHEVROLET **CHEVROLET TASK·FORCE TRUCKS**

6865 on Reader Service Slip

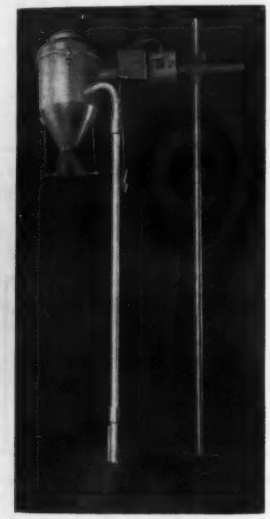
Co., and Vulcan Containers, Inc., P.O. Box 161, Bellwood, Illinois.

For more information circle 6867 on Reader Service Slip.

Loads hopper up to 30 ft high at 1200 lb/hr

Eliminates dust problems

Automatic vacuum loader will load material into hopper up to 30 ft high at rate of 1200 lb/hr. It handles a wide variety of granules including fine powders, and eliminates dust problems.



On continuous operations, vacuum loader keeps machine hopper fully automatic

It is constructed the same as any conventional industrial vacuum cleaner. A flat motor is mounted on top of container. Attached to the cover is replaceable cloth filter. Cover, motor, and filter all come off together.

Vacuum is accomplished by a flexible rubber throat at base of unit that closes when pressure drops. When timer turns off motor, vacuum is lost and throat opens and allows material to fall.

Automatic vacuum loader is manufactured by The Rainville Co., Inc., 224 Seventh St., Garden City, N. Y.

For more information circle 6868 on Reader Service Slip.

ELPAR ELECTRIC TRUCKS...

Save $1,200 Per Truck Per Year

Cost surveys made at a number of plants reveal that ELPAR electric trucks cost one-third less to operate and maintain than comparable gas models. Based on 2,000 hours of operation, this means an average saving of more than $1,200 per truck per year.

In addition, ELPAR electrics give twice as many years of dependable service as gas trucks operating under similar conditions. Thus, when *all* initial and replacement costs are added up, ELPAR electric trucks actually cost *less* to buy.

And, the surveys show that average downtime for ELPAR electrics is 2 to 3% while that for gas trucks is 10 to 15%.

More and more companies are converting their fleets to dependable, fume-free ELPAR trucks. Join the trend. Choose from our complete line of fork and ram trucks, low lift and high lift platform trucks, and mobile cranes—and save on *first* cost and *operating* cost. Get all the facts. . .

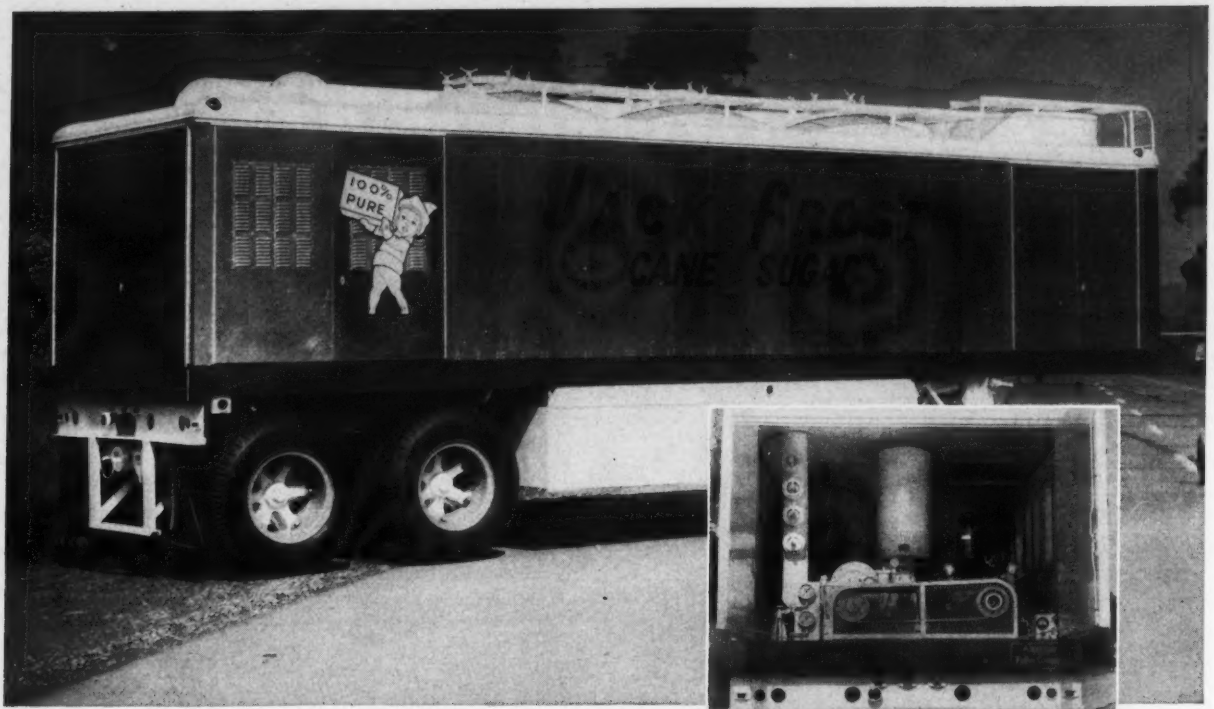
WRITE FOR YOUR COPIES
of the ELPAR *Lift*, "Gas vs. Electric Trucks" and "LP-Gas vs. Electric Trucks."

ELPAR ELECTRIC TRUCKS

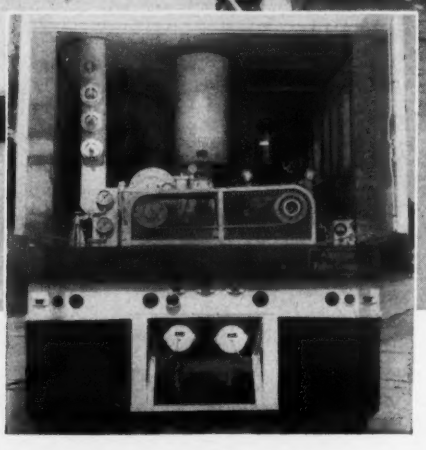
THE ELWELL-PARKER ELECTRIC COMPANY
4002 St. Clair Avenue • Cleveland 3, Ohio

Twice the Life . . . *1/3rd* the Operating Costs

6869 on Reader Service Slip



Side view of the new Fuller Airveyor Bulk Transport.



Rear view showing engine and blower compartment and controls. Note connections for flexible hoses. Hoses normally carried in underslung locker.

FULLER ENGINEERS CREATE SELF-LOADING AND UNLOADING TRAILER FOR HANDLING BULK INGREDIENTS

The new Airveyor® Bulk Transport was designed to handle such materials as sugar, malt, grain, lime and pulverized or pelleted plastics.

Processors and manufacturers now using bags and drums welcome this new shipping medium as a boon—it cuts costs and reduces loading and unloading time.

This new trailer can be loaded by gravity from an overhead bin, or it can be filled by means of a suction line from any type of railroad car; payload space is 800 cu. ft.

The trailer is self-unloading by means of a pneumatic system of the pressure type. Unloading rates vary from 20 to 50 tons per hour, depending on type of material involved and the conveying distance, which may be 200 feet or longer.

A special feature is that no rotary airlocks are being used to feed the material into the pressure line. Outside of remotely-set valves, there are no moving parts whatever—no grinding, no wear, and no particle degradation from rotating feeder vanes.

Another, equally important, feature is that the pneumatic conveying system is of the closed circuit type. The same air is being used over and over again. This eliminates the necessity of dust collectors at a consumer's plant. All that is needed is a bin with two pipes, to which the trailer connects by means of flexible hose. The closed circuit also prevents the transfer of atmospheric moisture to the material conveyed. For the purpose of purifying the return air, a dust collector has been built into the nose of the trailer.

The power plant is located in the rear of the trailer and consists of a gasoline engine driving a positive-pressure blower.

This extremely practical piece of equipment is another new development by Fuller materials handling engineers, backed by more than 30 years in pneumatic conveying. Consult Fuller about your bulk handling problems.

Visit us at the National Materials Handling Show — Booth No. 613-615

A-244
3684

FULLER COMPANY

176 Bridge St., Catasauqua, Pa.

SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION

Birmingham • Chicago • Kansas City • Los Angeles • San Francisco • Seattle

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. . . pioneers in harnessing AIR

FULLER COMPANY GENERAL AMERICAN TRADE MARK

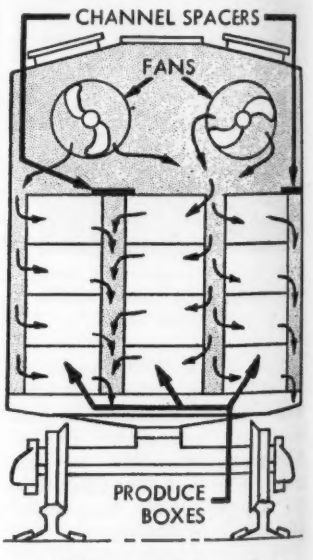
6870 on Reader Service Slip

Low-cost, rapid reefer cooling

Through-the-container, flow-directed air stream effective with grapes, cantaloupe, celery

Forced draft (flow-directed) air cooling — new low-cost method for rapid cooling of fruits and vegetables detailed on pg 37 — is being investigated for rail car shipments.

Fruit cartons are arranged in aisled stacks, with a few inches of space between rows. Cartons are slotted to allow air to flow *through the container* and circulate directly over product surface for efficient cooling. Inexpensive paperboard channel spacers between stacks properly direct air flow.



Schematic cross-section of refrigerated fan car. Air from fan (top) is directed through containers and around the product, in contrast to usual practice of moving air around the containers

Existing reefer fans are used — no extra fan power is needed.

In experimental shipments, using corrugated cartons, a non-skid resin locked each

carton into the stack. Individual containers were easily removed in New York, after crossing country, with little resistance due to the resin. Cartons were free of resinous disfigurement or marking at end of trip.

So far, several shipments of grapes, cantaloupes, and celery have been successful. For grapes, method allows an estimated 25% savings in container costs. Amount of bracing needed in the car is reduced to the extent of one-half or more.

Cooling cantaloupes this way can be accomplished almost as fast as by using crushed ice blown into the car. Yet savings have been recorded as high as $40 or more per car.

Forced draft (flow-directed) air cooling of perishables in rail shipments, and containers used, are developments of Fibreboard Paper Products Corp., 475 Brannan St., San Francisco 19, Calif.

For more information circle 6871 on Reader Service Slip.

Non-skid resin is product of National Starch Products, Inc., 270 Madison Ave., New York 16, N.Y.

For more information circle 6872 on Reader Service Slip.

Offers smooth, anti-friction surface for conveyors

A new tape with a low coefficient of friction has been developed. When applied to conveyors, bread chutes, trays, etc., it offers a smooth, anti-friction surface.

Tape is Teflon coated on one side, with a heat-stable, non-curing, pressure-sensitive adhesive on the other. Adhesive has an operating temperature range from −100 to 500°F.

A special priming treatment gives high bondability to metal, glass, fabrics, plastics, painted and enameled surfaces. Tape has tensile strength of 1000 psi.

Fluorocarbon tape (Fluorolin 101) is manufactured by Joclin Mfg. Co., Wallingford, Connecticut.

For more information circle 6873 on Reader Service Slip.

New Invention Cuts Waste Disposal Costs By Two-Thirds in Food Processing Plants

Industry Cost Averages May Be Lowered Soon

If your plant is average, you're probably spending between .55 and .85 cents for every cubic yard of waste or trash moved to the disposal area . . . not including truck operation costs.

A recent development, the DEMPSTER-DUMPMASTER self-loading packer, promises to cut direct disposal costs to a new industry low of .07 to .16 cents per cubic yard for volume producers.

This new approach is an extension of the widely-established DEMPSTER-DUMPSTER System, in that it employs detachable waste storage containers. However, instead of carrying each container to the disposal area for dumping, the new machine empties many containers into its body, where the material is compacted to a fraction of its former volume. This permits per-trip payloads of 50 to 100 cubic yards of loose material, depending on its characteristics.

Multiple exposure photo shows dumping of 6 cu. yd. container.

How it Operates

The one-man Dumpmaster makes its rounds from container to container. Approaching, the driver engages lifting channels on the container's sides with the clearance arms. From controls in the cab, or remote controls at the front bumper, the container is lifted and rotated, discharging waste into the packer body. The material is hydraulically compacted while enroute to the next location. Containers may also be handled from docks or below grade. The safety clearance arms never pass the cab windows, eliminating possibility of driver injury.

The newly developed DEMPSTER-DUMPMASTER is shown with the seven basic containers it serves. Being hoisted is a 6 cu. yd. model. On ground are 1, 2, 3, 4 and 5 cu. yd. designs. Open container is used for hand-loading service.

New "Tracking" Caster Developments Make Plant "Container Trains" Practical

To whip the high cost of moving refuse outside, many plants are going to "container trains." Using special casters and couplers, eight to ten containers are towed by "plant mules" to inside generation points where an empty is dropped off and the full one is coupled on. Outside, the containers are uncoupled and automatically emptied by the waiting DUMPMASTER.

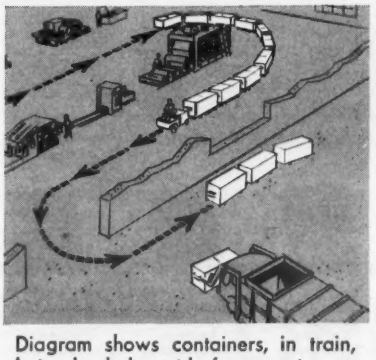


Diagram shows containers, in train, being hauled outside for emptying.

* * *

Many Designs Available

Standard and special-purpose containers, ranging from one through six cubic yard capacity, with or without casters, are available. The two cubic yard container above holds the equivalent of over 12 30-gallon trash cans.

Cost-Finding Book Offered

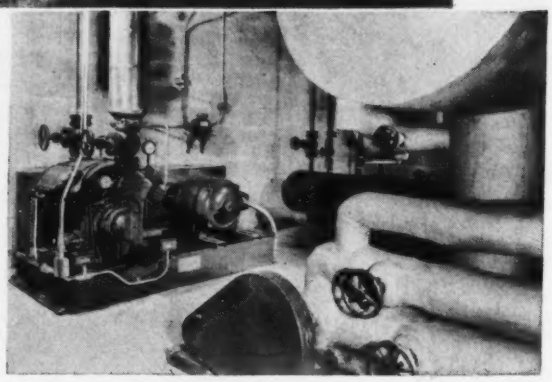
Write for the free 40-page book, "How to Cut Waste Disposal Costs," offered by the manufacturer. It contains cost-finding formulas, solutions to problems, case histories, industry average costs, etc. Equipment demonstrations arranged on request.

Mfd. by Dempster Brothers, Inc.

DEMPSTER BROTHERS

KNOXVILLE, TENN., DEPT. FP-5

Borden's Dairy, Milwaukee, Wisconsin. View of trucks hooked up to a Vilter cold plate charging line. System is the recirculating type.



Interior view of the Borden plant showing Vilter 4-cylinder Ammonia VMC Compressor, recirculating pump, surge tank and receiver.

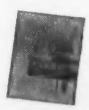
Another Vilter Truck Cooling System!

Recently the Borden Company installed another completely automatic central station truck cooling operation in Milwaukee to provide refrigeration for 31 retail milk delivery trucks at a branch plant. Every effort was made by both Borden and Vilter to make this an outstandingly clean and efficient installation. The results are shown in the above two photos.

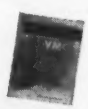
Each year more dairies are converting to hold over plate refrigerated milk trucks charged from the dairy's central station refrigeration system. These benefits accrue: Use of truck as a cold storage room, almost constant product temperature to the last delivery, more convenient loading for an early start, dry refrigeration. This central type system results in lower *first* costs, less maintenance, and guaranteed refrigeration, as compared to truck-mounted self-contained units.

If you are thinking about refrigerating your trucks, call in your Vilter representative, TODAY.

Write for these helpful bulletins to The Vilter Manufacturing Company
Dept. D-702, 2217 South First Street, Milwaukee 7, Wisconsin



Bulletin 734 Vilter Truck Charging Systems



Bulletin 617 Vilter VMC Ammonia Compressors

Bulletin 732 Vilter Evaporative Condensers

Vilter®
REFRIGERATION and AIR CONDITIONING

THE VILTER MANUFACTURING COMPANY, Milwaukee 7, Wisconsin

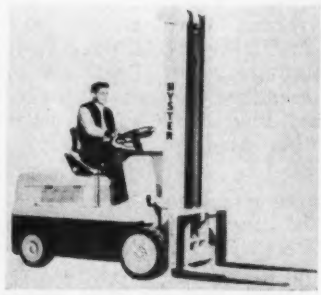
Air Units • Ammonia & Freon Compressors • Booster Compressors • Baudelot Coolers • Water & Brine Coolers • Blast Freezers • Evaporative & Shell & Tube Condensers • Pipe Coils • Valves & Fittings • Pakice & Polarflake Ice Machines

6874 on Reader Service Slip

material handling

New developments in fork lift trucks

design innovations, ingenious accessories improve performance, safety, ease of operation

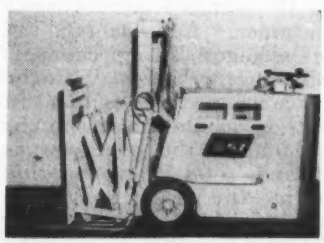


Nonstop forward-reverse shifting with optional, completely automatic transmission increases close-quarter maneuverability of new 6000-, 7000-, 8000-lb capacity trucks. Special transmission gives operator positive control of both inching and braking through same foot pedal, provides infinite power ratio over full range of vehicle speeds.

Trucks are cushion-tired, combine long wheelbase with short length, have lower-than-usual mast height for any height of lift.

Space Saver lift trucks, with standard constant mesh transmission or optional Power Shift Hystamatic transmission, are manufactured by Hyster Co., 2902 N.E. Clackamas St., Portland 8, Ore.

For more information circle 6875 on Reader Service Slip.



Speedy palletless handling is achieved by 2000- and 3000-lb capacity electric fork trucks equipped with pusher attachment. Latter provides a con-

It should look like this!...

and can with Midwest's NESTAWAY SYSTEM

No other handling system protects bakery products like the Nestaway System. When you use Nestaway, your products reach the customer just as they left the wrapper - never rehandled. The result - greater product appeal and greater sales for you! Nestaway is fully covered by U.S. and Canadian patents.

Write today for FREE Brochure

MWM
NESTAWAY
"Engineered Material Handling Systems"
MATERIAL HANDLING DIVISION
MID-WEST METALLIC PRODUCTS, Inc.
450 FILM Bldg. - CLEVELAND 14, OHIO

6876 on Reader Service Slip

venient means for mechanically unloading packaged or bagged material.

Pusher attachment is development of The Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio.

For more information circle 6877 on Reader Service Slip.

Controlled "inching" during stacking is a major performance advantage of new, electric-powered fork truck line. Special "carbon pile" drive control also provides smooth acceleration from standstill to full maximum speed. First production model, 2000-lb capacity, travels up to 6.5 mph both forward and reverse.

Truck's upright will tilt 12° backward and 6° forward, aiding load pickup when truck is on incline.

Clarklift Electric EC-20 fork truck is built by Clark Equipment Co., Industrial Truck Div., 1921 Escote St., Battle Creek 80, Michigan.

For more information circle 6878 on Reader Service Slip.

"Sorry lady, we only sell it by the quarter pound"

New chain has steel's strength plus nylon's wear resistance

NY-STEEL FLAT TOP CHAIN on Horix Fitting Machine with nine fitter valves. This unit is in service at Mangels Herold Company, Baltimore, manufacturers of King Liquid Laundry Starch.

Link-Belt Ny-Steel flat-top chain fits existing sprockets

Nylon and Steel — Link-Belt combines both in Ny-Steel Flat-Top Roller Chain. This combination gives you a smooth, resilient nylon carrying surface to reduce glass breakage and track wear — plus a precision steel roller chain with the strength and durability to carry heavy loads without stretching. Ny-Steel is less than half the weight of similar all-steel chain — has proven itself ideal for safe, low-cost conveying of bottles, cans and similar items.

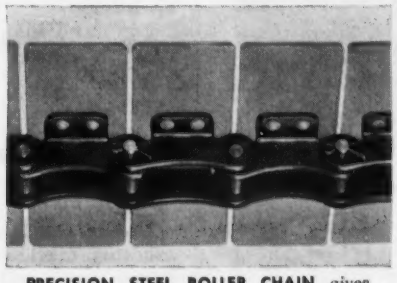
Exceptional wear-life

Long life is one of Ny-Steel's many outstanding features. It resists chemicals and corrosion . . . retains pitch, even under moisture conditions . . . gives long-lasting service with practically no top-plate or track wear.

Ny-Steel is easy to install . . . fits existing sprockets. And for new installations or replacements, Link-Belt makes a full line of cut-tooth sprockets. Ny-Steel comes with top plates assembled on either stainless or heat-treated carbon steel chain.

Why Ny-Steel is industry's most advanced flat-top conveyor chain

RIVET-FREE SURFACE — Top plates are of uniform thickness, without rivet pockets or projections. Each is chamfered and mounted level with adjacent plates.



PRECISION STEEL ROLLER CHAIN gives Ny-Steel its great strength . . . facilitates installations and maintenance. Can be easily coupled or uncoupled.

SECURE BONDING OF CHAIN AND PLATE — Underside of each plate is molded with projections that become self-rivets. This leaves surface free of obstructions.

The large picture above illustrates one of many applications of Ny-Steel flat-top chain. Besides being smooth, nylon plates are shock-absorbent . . . assure safe, easy transfer of containers.

Ny-Steel top plates are available in 3¼ and 4½-in. widths. Folder 2492 contains complete dimensions and specifications.

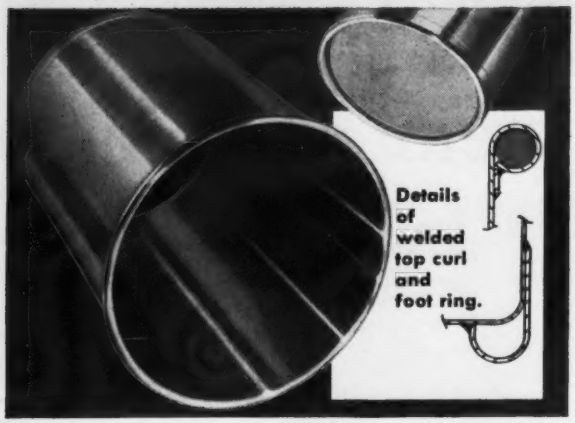
HEADQUARTERS for Link-Belt products is your nearby Link-Belt factory branch store or authorized stock-carrying distributor. Refer to the yellow pages of your local phone directory.

LINK-BELT

CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 14-749

6879 on Reader Service Slip



Hackney Stainless Steel Crevice-Free Food Containers

- Meet local, federal maximum sanitary regulations
- Welded foot ring curl and top curl crevices
- Seamless type construction
- Made to resist years of hard service
- 30-, 55-gal. sizes—8 models; 2 types of covers available
- Plain and soldered-crevice models for less critical service

Send for complete details. Write:

Pressed Steel Tank Company
Manufacturer of Hackney Products
1459 S. 66th Street, Milwaukee 14, Wisconsin
Branch offices in principal cities

CONTAINERS AND PRESSURE VESSELS FOR GASES, LIQUIDS AND SOLIDS

6880 on Reader Service Slip

KEEP ALL YOUR TRUCKS IN SERVICE ALL THE TIME

with Nutting Demountable RUBBER TIRED WHEELS

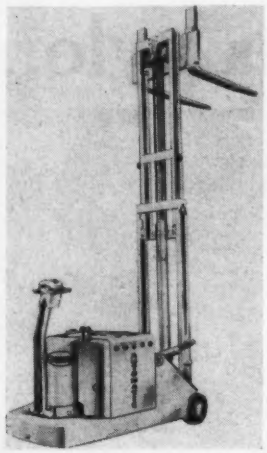
You don't have to buy expensive complete new wheels when tires are worn! Bolted assembly permits tire replacement in minutes—No special tools!

Next time you need new wheels, casters or trucks, change to Nutting Demountables. No stretch or creep under severest service—and only Nutting, pioneers in the field, has sizes and capacities for every type of truck or trailer.

For details and a representative listing of the most complete floor truck line in America write for Junior Catalog 54G . . . or consult classified phone directory under "Trucks" or "Casters" for nearest Nutting representative.

SINCE 1891 **Nutting** TRUCK AND CASTER CO.
3226 DIVISION ST., FARIBAULT, MINN.
Export Sales: School International, Inc., North Lincoln Ave., Chicago 18, Ill.

6881 on Reader Service Slip



Highest lift for its class — 135" with 83" uprights — is claimed for walkie-type electric-driven fork stacker. In 2000-, 2500-, and 3000-lb capacities (latter's lift is 3" shorter), each model has backward tilt of 18° for greater load stability in transit. Forward tilts are 3°. Powerheads measure only 101", 101", and 108", respectively, including 36" forks, facilitating right-angle operations.

Manufactured with either monolift, which offers 15" of free lift, or duo-lift, with 68" of free lift.

"Transporter" walkie-type electric-driven fork stacker is built by Automatic Transportation Co., Div. of The Yale & Towne Manufacturing Co., 149 W. 87th St., Chicago 20, Illinois.

For more information circle 6882 on Reader Service Slip.

Prevents pulley belt slippage

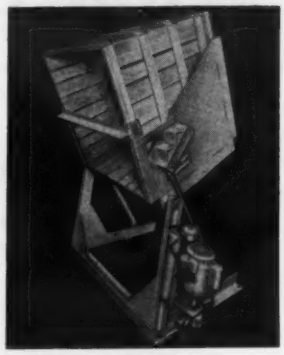
Use of Condersite, a woven asbestos fabric, to provide a better grip and thus eliminate belt slippage with transmission pulleys or rollers, is described in 4-pg folder.

Illustrated folder describes product, uses, and methods of application.

Copies of folder on Condersite, "For Increased Transmission Efficiency", is available from Condersite Engineering Corp., 2015 Chancellor St., Philadelphia 3, Pa.

For your copy simply circle 6883 on Reader Service Slip.

Cut Bulk Handling Costs!



with **UHRDEN'S** New **TUBAR TWIN-CYLINDER BOX DUMPER**

- Handles up to 4000 pounds . . . elevates to 60 inches
- Stops and holds loads at any point in dumping cycle
- Optional splash-proof, explosion-proof power features

Especially designed for use in food processing plants . . . built for years of heavy-duty, all-purpose service. Handles boxes, crates, cases, baskets, and other heavy, bulky containers quickly, safely, easily!

STANDARD PRODUCTION MODELS . . . OR BUILT TO YOUR SPECIFICATIONS

WRITE FOR DATA ON UHRDEN'S COMPLETE LINE OF TUBAR DUMPERS

U-158-38

Tubar DUMPER DIVISION
uhrden, inc.
DENNISON, OHIO
Tubar ASSURES QUALITY

6884 on Reader Service Slip

A HAMMOND Screw-Lift PATENTED AND TRADE MARK REG. U.S. PAT. OFF. is Engineered and Built for UNFAILING PERFORMANCE —That's The Big Difference!

1. It cannot clog or choke because a patented Relief Chamber at the loading point provides 130% more capacity than the rated handling capacity of the unit.
2. A patented ¼ segment scientifically shaped loading opening at bottom length of conveyor screw permits exact loading with no overloading of vertical screw.
3. Patented feeder control, co-ordinated with directional operation provides a proven efficient transfer of materials from horizontal to vertical conveying.
4. Patented Split Stabilizer Bearings with self-lubricating bushings at each conveyor length keep screw and housing concentric for quiet, smooth operation.
5. Ingeniously designed patented Slip Couplings between conveyor lengths enable quick removal of any section for cleaning and maintenance.
6. Patented "U" Edging is used on all horizontal and vertical lengths of housing to provide quick, time-saving access.

The above are only a few of the many basic features you get when you buy a Hammond Screw-Lift. Certainly — a Screw-Lift costs more, but you're money ahead from the start and have few, if any, operational headaches.

Write for Bulletins M-500-2 and M-600-2.

Three of the largest food processing plants in the U.S.A. have over 100 Screw-Lifts in continuous operation
Screw Conveyor Corporation

6885 on Reader Service Slip

material handling

Adjustable V-belts

Six-pg bulletin tells how adjustable length of sectional V-belts can eliminate stocking different lengths of the same type. Illustrations show how links remove.

Belts come in oil-resistant, heat-resistant, fire-resistant grades; also regular types. For drives from ½ to 1000 hp.

Booklet on Dixlink V-belts is issued by R. & J. Dick Co., Box 388, Passaic, N.J.

For your copy circle 6886.

Trucks and dollies

Steel-frame platform and 2-wheel hand trucks, as well as a wide selection of dollies are all described and illustrated in a 6-pg folder. Design features, capacity range of each series are listed.

Literature on steel-framed trucks is issued by The Fairbanks Co., 393 Lafayette St., New York 3, New York.

For your copy circle 6887.

For more information on product at right, circle 6888 see information request blank opposite last page.

new! "projection welded" conveyor chain stays cleaner, runs better, reduces conveying costs!

DIAMOND dura-weld Top Plate Conveyor Chain

...streamlined to turn out more work with less worry— in food, beverage, automation, packaging and other small product handling operations.

DIAMOND "projection welds" produce a permanent metal fusion as strong as the metal itself. Permits cleaner streamlined design.

Dura-Weld's case hardened bushed joints and deep sprocket engagement assure smooth chain operation under maximum power, load and speed conditions.

Dura-Weld is easily detachable at any joint. Dura-Weld links may be attached to existing roller chain of the same general type and may be used on the same rails.

DIAMOND Dura-Weld requires none of the attachments or rivets shown in Figure A. This permits a simplified design that is easier to keep clean, and gives up to 35% more rail load-bearing area. Permits use of wider supporting rails for greater distribution of load, Figure B.

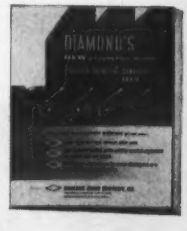
DIAMOND Dura-Weld is a greatly improved top plate conveyor chain designed for modern high-load, high-speed conveying requirements.

Dura-Weld top plates are "projection welded" to the roller chain linkplates, creating a permanent metal fusion. This technique requires no attachments, rivets or extra fittings which add to the weight and cost of other chains. You get a lighter weight, smoother running chain, that *costs less to buy and less to maintain*—yet is designed to operate continuously at *maximum loads and speeds.*

Dura-Weld gives you up to 35% more rail load-bearing area, permitting use of wider supporting rails. Because it has fewer parts to collect dirt it is easier to keep clean . . . and is less susceptible to shutdowns for repairs or maintenance.

Wherever flat top conveyors are used for intra-machine processing, bottling, capping, labeling, etc., you can cut costs and speed up production with new, streamlined, DIAMOND Dura-Weld Conveyor Chain. Write for full details, *today!*

Diamond Dura-Weld Conveyor Chain is now available from your Diamond Distributor's stock!



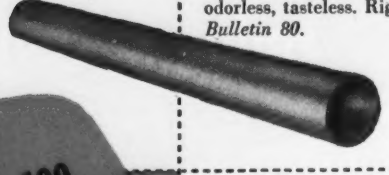
Write for FREE Folder!
Gives complete listing of DIAMOND Distributors and full description, specifications and prices of DIAMOND Dura-Weld Top Plate Conveyor Chain.

DIAMOND CHAIN COMPANY, INC.
A Subsidiary of American Steel Foundries
402 KENTUCKY AVENUE, INDIANAPOLIS 7, INDIANA
Offices and Distributors in All Principal Cities

Copyright 1958 Diamond Chain Co., U.S.A.

TOUGH ACE-ITE PLASTIC PIPE

General-purpose moderately priced rubber-plastic pipe handles most common chemicals to 170 deg. F. . . . except few strong acids and organic solvents. Tough, odorless, tasteless. Rigid pipe ½" to 6". *Bulletin 80.*



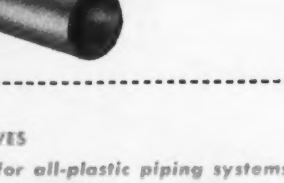
ACE offers 100 years experience to

STOP CONTAMINATION

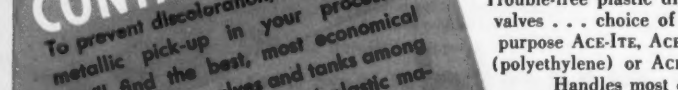
To prevent discoloration, taste, odor or metallic pick-up in your processes, you'll find the best, most economical piping, pumps, valves and tanks among the many ACE rubber and plastic materials. Wide range of temperatures, pressure, impact resistance. Phone nearest American Hard Rubber Company distributor, or write for Technical Data CE-50.

VALVES

for all-plastic piping systems



Trouble-free plastic diaphragm valves . . . choice of general-purpose ACE-ITE, ACE PARIAN (polyethylene) or ACE SARAN. Handles most corrosive chemicals and food ingredients. Sizes ½" to 2", 50 psi. at 77 deg. F. *Bulletins 80 and 351.*



RIGID VINYL . . . STRONG, AGE-PROOF

ACE RIVICLOR is a new rigid threaded plastic pipe with good aging and high impact strength. Not affected by most inorganic acids and alkalis, also excellent for many organics. Sizes ½" to 4". *Ask for Bulletin CE-56.*

1001 USES *for ACE-FLEX Tubing*

Excellent chemical-resistant, all-purpose flexible plastic tubing. Sparkling clear, easy to clean, odorless, non-toxic, can be steam-sterilized. ⅛" to 1" ID. *Bul. 66.*

ACE processing equipment of rubber and plastics

AMERICAN HARD RUBBER COMPANY

Ace Avenue • Butler, New Jersey

DIVISION OF AMERACE CORPORATION

6889 on Reader Service Slip

While some smaller screens have only one point of application of the vibrating force, larger ones have several points where force is applied. In unit viewed above, eight electromagnetic vibrators are used. Standard tilt of screen varies for each material. Tilt may be easily changed by raising or lowering

Only two sides of the screen are supported. Note "roll" in trough of screen

Uses sonic vibrations to . . .

Increase sifting and de-watering capacity 5 times

- Uses only 1/3 power
- Virtually eliminates clogging of screens
- Requires no special foundation or superstructure

Uses: Applying sonic vibrations to sifting and de-watering has led to the development of new sifting and de-watering machines.

Sifting unit will separate particles of ½" diameter and larger to as fine as 30 microns. It will separate coffee "fines" as small as 40 microns from more desirable granules, producing a dust-free coffee.

De-watering unit may be used in de-watering and classifying slurries of high water content. It is useful, for example, in processing ketchup and in the preparation of fruit juices and sirups.

Features: There are no dead areas on the screen during sifting operations. Blinding

has been eliminated, preventing clogging of screen. Because of these features, output has been increased five times over methods usually employed.

Shearing forces have been eliminated, reducing abrasive wear on screen.

Installation costs may be reduced since no superstructure or special foundation for mounting is required to support the units.

If desired, the entrance and discharge space only may be enclosed rather than enclosing the entire unit to prevent dust from spreading. This feature affords easy access to, and inspection of, all parts of the machines.

Power required to operate units in most cases is 1/3 that required for ordinary sifting methods.

Description: Machines usually consist of two essential elements — a sifting unit and a hopper with a feeding device.

Sifting machine

The sifting machine consists of a carrier with vibrators, a frame and screen, and a collecting cone beneath it.

In the system, a fundamental frequency of 120 cps (60 cps for some de-watering applications) is induced by an electromagnetic system.

A connecting arm from this electromagnetic system is attached to the sifting screen, transmitting energy directly to the screen area. This sets up vibrations with very little flexing of the screen itself (maximum amplitude is 2 mm — 0.080").

Oscillations spread out across the screen from the vibrating points in much the same way that ripples radiate from a stone dropped in a tank of water. Their waves bounce back from the sides of the screen and also overlap, beating against one another and intensifying the sifting action.

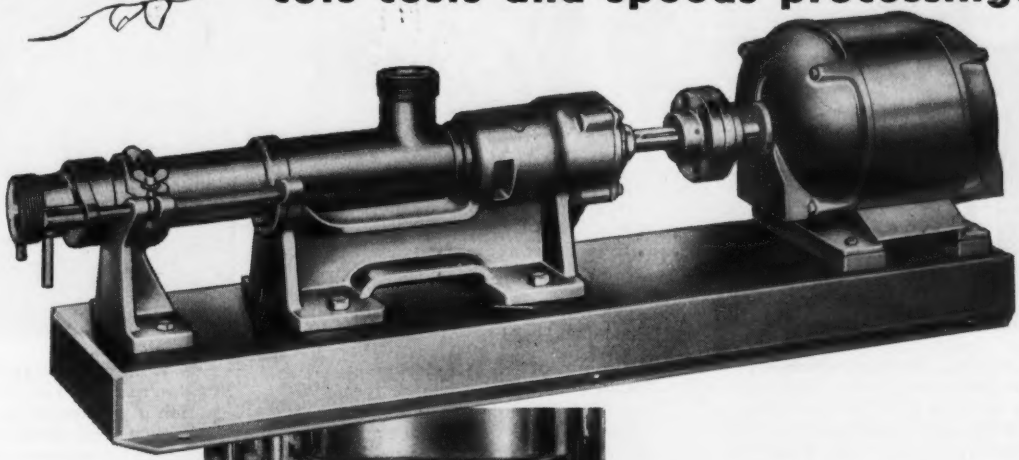
Thus as the screen is moving up and down at the fundamental frequency, a series of harmonics develop. These harmonics may reach effec-

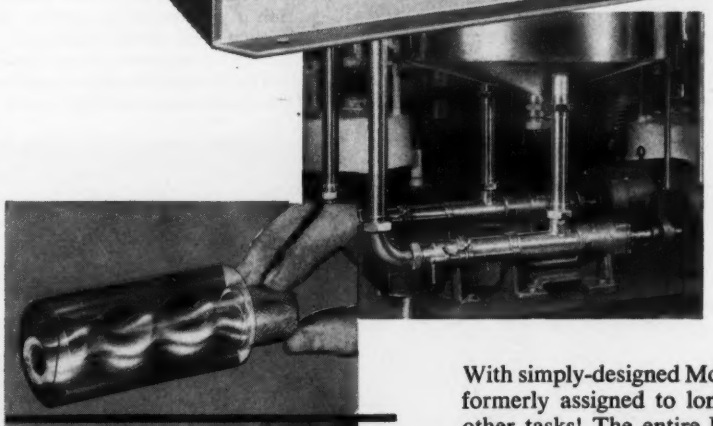
(*Continued on page* 113)

Quick cleaning

MOYNO® FOOD PUMP

cuts costs and speeds processing!





"Progressing cavity" principle . . . pumps everything from hamburger to potato salad!

With simply-designed Moynos pumping your food products, workers formerly assigned to long, costly pump cleanups can be used for other tasks! The entire Moyno unit can be quickly dismantled for thorough, effective cleaning and re-assembled in minutes. Moynos are more sanitary on the job, too. Pumping element has smooth contours which can't lodge particles where bacteria might thrive. Bearings are isolated from pumping compartment to prevent contamination by lubricant.

Moynos operate on the "progressing cavity" principle, illustrated at left. The screw-like, reversible rotor revolves in a double threaded stator, creating the progressing cavities. Material moves smoothly along, without pulsation, aeration, agitation, disintegration or contamination! All wettable parts, except stator, are stainless steel. Stator may be stainless steel, synthetic rubber, odorless bakelite or other material—depending on service. Any food product that will move through a pipe can be pumped with a Moyno—even lumpy ones like fruit cake mix!

Learn more about Moyno—the quick-to-clean pump that food can't stump. Write today for Bulletin 30-FP!

ROBBINS & MYERS, INC.

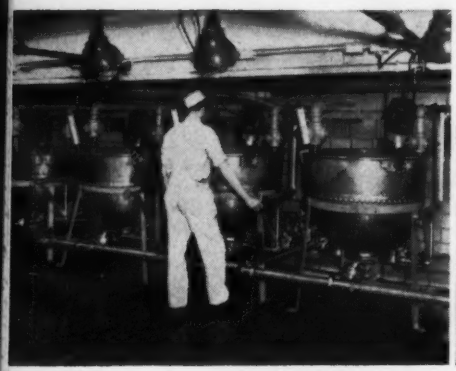
SPRINGFIELD, OHIO | BRANTFORD, ONTARIO

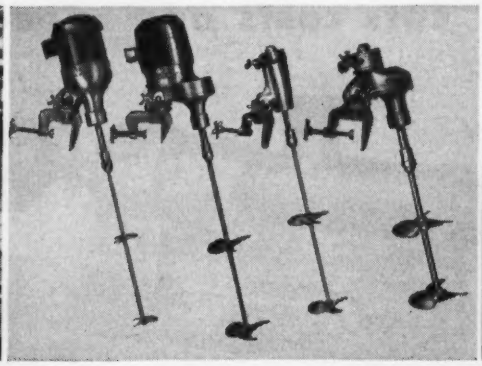
R&M

6890 on Reader Service Slip

How to choose a portable mixer

To get your money's worth, ask yourself these questions





1. Will it mix my materials efficiently? There's one easy way to be sure your mixer will combine fluid flow and turbulence in optimum proportions for good mixing. Specify a LIGHTNIN Portable Mixer! Every LIGHTNIN is guaranteed—unconditionally—to do the job right.

2. How much choice do I have? With LIGHTNINS, you can choose from *thirty* standard portables, ⅛ to 3 HP. Your choice of direct or gear drive; electric or air motor. Shafts and propellers in all alloys and coverings. Whatever the job, there's a LIGHTNIN to handle it.

3. Is the motor right for my conditions? You're assured of correct motor application if you specify LIGHTNINS. All enclosures (open, totally enclosed, Class 1, Group D, explosion-proof) and all standard current specifications—and many non-standards—are carried in stock.

4. How is the shaft supported? Is the mixer built to protect the motor against the strain of radial shaft loads? You'll find this vital safeguard in LIGHTNINS. An extra ball bearing here steadies the shaft for true running—protects the motor from radial shaft loads.

5. What about adjustability? You can quickly swing a LIGHTNIN Portable to any angle for the exact kind of mixing you want—slow roll, vortex, or rapid top-to-bottom turnover. Universal ball-and-socket clamp tightens without wrenches—stays tight.

6. Can I meet special requirements with it? You get widest latitude for matching *any* need with LIGHTNINS. Full range of propeller designs for any special or unusual mixing job; alternative mountings for permanent or semi-permanent use.

7. Where can I get prompt service on fluid mixing? Just call your LIGHTNIN Mixer representative. He can quickly give you a *guaranteed* recommendation. And he's near you—look him up in Thomas' Register or the yellow section of your telephone directory. Or write us direct.

WHAT SIZE AND TYPE of mixer do you need? Check here for latest bulletins giving full description, packed with helpful facts on mixing:

- ☐ Turbine, paddle, propeller types; top or bottom entering: 1 to 500 HP (B-102)
- ☐ Propeller types; top entering: ¼ to 3 HP (B-103)
- ☐ Portable: ⅛ to 3 HP (B-108)
- ☐ Side entering: 1 to 25 HP (B-104)
- ☐ Laboratory and small-batch production types (B-112)
- ☐ Condensed catalog showing all types (B-109)
- ☐ Quick-change rotary mechanical seals for pressure and vacuum mixing (B-111)
- ☐ Data sheet for figuring mixer requirements (B-107)

Check, clip, and mail with your name, title, company address to:

MIXING EQUIPMENT Co., Inc., 132-eMt. Read Blvd., Rochester 11, N.Y.

In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 10, Ont.

Lightnin® Mixers

MIXCO fluid mixing specialists

Conversion chart

Wall chart (8½ x 11½") contains over 350 conversion factors including those constantly needed as well as many found only in engineering handbooks. "Conversion Chart" available from Precision Equipment Co., 4411E N. Ravenswood Ave., Chicago 40, Ill.

For your copy simply circle 6891.

Movie on processing poultry

Film consists of scenes taken at several poultry processing plants. Shows latest techniques on dressing, eviscerating, and chilling.

Film (16mm) is in color and sound, running time of 42 min. Is available for showing from Gordon Johnson Co., 2519 Madison Ave., Kansas City 8, Mo.

For more information circle 6892.

For more information on product at left, circle 6893 see information request blank opposite last page.

(*Continued from page* 111)

tive amplitudes at frequencies up to 6000 cps.

Increase in intensity of vibration is accomplished by increasing the electromotive force on the electromagnets. This results in a sharper or more rapid start in the vibration. However, since the cps remains constant, the over-all fundamental vibrating rate remains constant. Greater force results in larger waves and larger harmonics.

Considering the water tank analogy, this would be similar to dropping a larger stone into the water which, through its greater force, would create larger waves and greater intensity.

De-watering machine

In the de-watering unit, one side of the screen or sieve is firmly clamped to the frame of the machine. The opposite side is connected to an electromagnetic vibrator. Screen is otherwise unsupported so that a trough is formed.

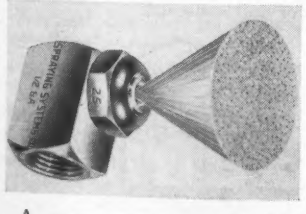
Upon basic oscillation of 60 cps, harmonic vibrations are built up as described before in the sifter.

Net action is the formation of a "roll" of de-watered pulp.

Novo Sonic sifting and dewatering machines are a development of United Specialties Co., subsidiary of Industrial Enterprises, Inc., 9705 Cottage Grove Ave., Chicago 28, Illinois.

For more information circle 6894 on Reader Service Slip.

Save installation space on spray nozzle with 90° elbow turn



A new spray nozzle has been developed for use on equipment where only limited space is available for installation.

(*Continued on next page*)

HENSZEY

SPRAY DRYERS

WITH HORIZONTAL AIR SUSPENSION

for powdered

SKIM MILK •

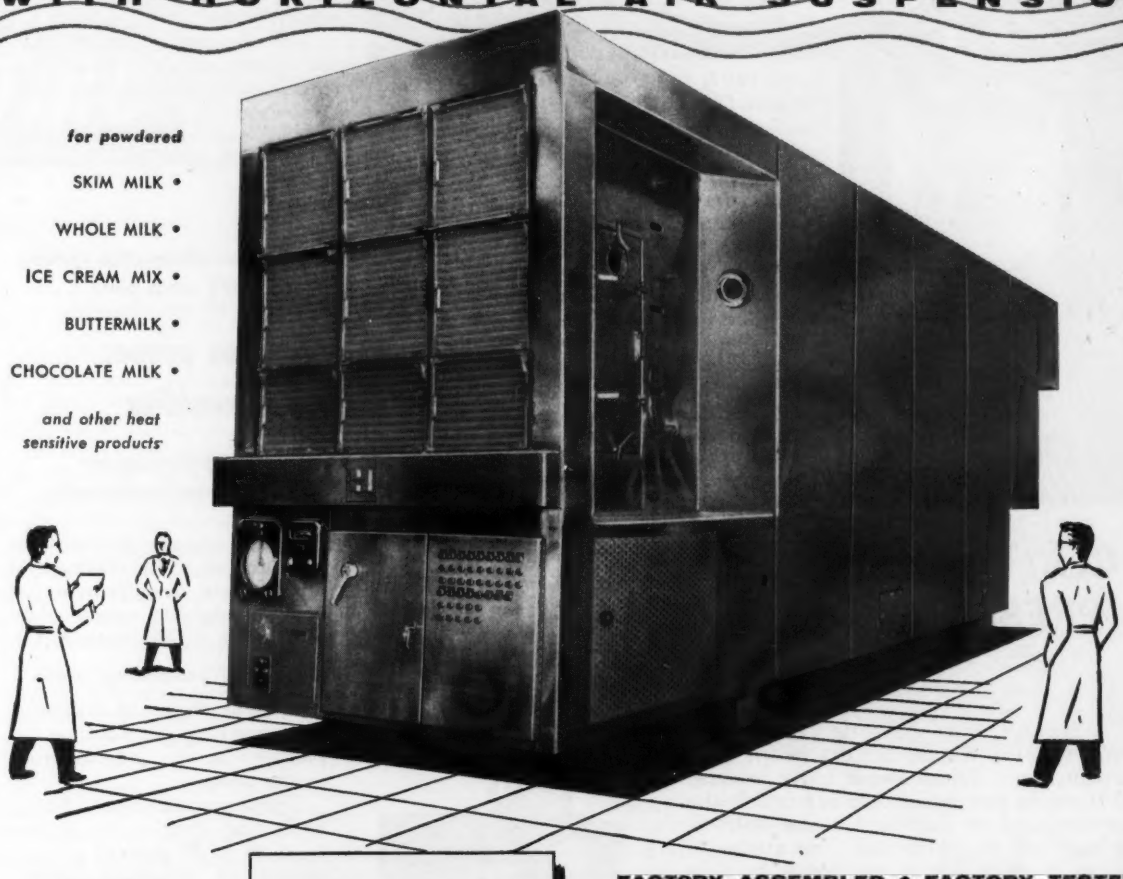
WHOLE MILK •

ICE CREAM MIX •

BUTTERMILK •

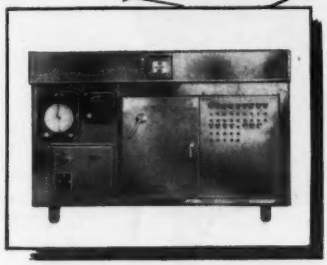
CHOCOLATE MILK •

and other heat sensitive products



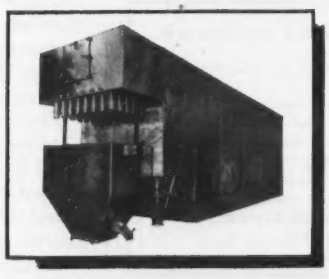
PUSH BUTTON CONTROL CENTER

Completely pre-assembled at factory. Electrical system includes starters, automatic controls, fuses, disconnects, circuit breakers, and wiring. Control panel contains all instruments for automatic control and visual reference.



STAINLESS STEEL CYCLONE COLLECTORS

Easily accessible for immaculate sanitation. Highly polished welded stainless steel for maximum recovery.



FACTORY ASSEMBLED • FACTORY TESTED

Take a good look at this new Henszey Spray Dryer. Here's clean, simplified design for spotless sanitation and high profit performance.

Horizontal Air Suspension dries powder in less than seven seconds. Maximum recovery and absolute control of product uniformity and flavor.

Factory tested . . . factory assembled . . . ready for operation in your plant in just a few days.

All stainless steel . . . inner chamber and outer shell welded air-tight.

Whatever your product . . . skim powder, whole milk powder, ice cream mix, buttermilk, chocolate milk powder . . . all these and many more can be processed with your versatile Henszey Dryer.

HENSZEY COMPANY
DEPT. F • WATERTOWN, WISCONSIN

Manufacturers of: Multiple Effect and Single Effect Evaporators, Spray Dryers, and Tubular Preheaters.

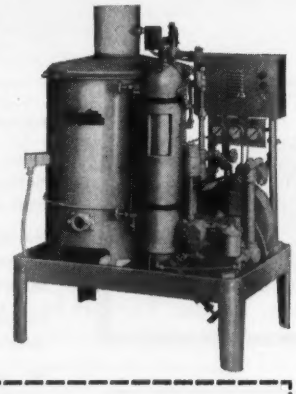
6895 on Reader Service Slip

Since 1897, the Dickinson Family of Portland, Oregon, has guarded Grandma Dickinson's secret for cooking and preserving fruits with that real "out of the woods" flavor and goodness.

For years the Dickinson Family has depended on Clayton Steam Generators. Here is what Mr. Walter Dickinson, Jr. says about them. "With our Claytons we save one hour daily in fire-up time, and use 25 to 40% less fuel than with former ordinary boiler. Most important, they respond instantly to variable steam demands necessary in processing the small quality-controlled batches of flavorful preserves which have made Dickinson Family products nationally famous."

CLAYTON HELPS DICKINSON FAMILY PRESERVE LIP-SMACKING FLAVOR OF FINE FRUITS

Buying Clayton Steam Generators is just smart business! These steam units produce more steam at less cost in only one-fourth the space occupied by ordinary steam boilers. They cost less to install too... no stacks to erect, no walls to knock out, lower rigging expense and lower hauling costs... and you can put them practically anywhere! The secret of Clayton's higher efficiency is *controlled circulation* and balanced feed, a principle of using a continuous single pass tube... thus, they are more reliable and easier to operate, maintain. From a cold start, Claytons produce steam in 3 minutes... and all day they produce only steam needed—instantaneously. Let a Clayton representative give you the complete facts.



Clayton MANUFACTURING COMPANY

Sirs: Please send us more information on Clayton Steam Generators.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

We use steam for_____

Send to: Clayton Manufacturing Company
403 N. Temple City Blvd.
El Monte, California

6896 on Reader Service Slip

processing

(*Continued from preceding page*)

Body of nozzle provides 90° elbow turn. Where spray must be directed at 90° angle to inlet pipe, nozzle may be installed without additional fittings.

Nozzle provides a full cone spray pattern with uniform distribution.

Full Jet Spray Nozzle with 90° elbow turn was developed by Spraying Systems Co., Bellwood, Ill.

For more information circle 6897 on Reader Service Slip.

Use of three refrigeration systems at Whitman's candy plant . . .

provides proper temp-humidity

. . . to meet processing and personal comfort requirements

Three separate systems are used to solve the myriad of refrigeration requirements at the Philadelphia candy plant of Stephen F. Whitman & Co.

General processing areas

A wide range of temperature-humidity conditions is required in the general processing areas.

Temperatures from 62 to 90°F, and relative humidities from 40 to 50 percent are required to maintain proper operating conditions in the cast centers department, enrobing rooms, chocolate packing rooms, and caramel-cutting rooms.

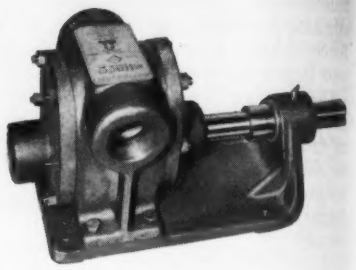
Three centrifugal refrigeration units with a total capacity of 1022 tons are used to serve these areas.

Chilled water, from three chilled-water pumps, is piped through the five buildings housing these processing areas, and is then circulated through cooling coils in overhead ducts.

Fresh air is drawn in from outdoors, dehumidified, mixed with a percentage of room air, passed over cooling coils, filtered, and sent into production rooms through overhead ducts.

Both the shell plant and enrobing tunnels are critical

GAULIN Twin-Lobe* P.D. Pumps Provide High Efficiency on Wide Range of Products



Manton-Gaulin presents a completely new concept in rotary positive displacement pumping — The Gaulin Twin-Lobe*® design.

Unusual simplicity and extremely efficient performance are the results of a special "Twin-Lobe" pumping principle. These are the advantages:

- Simple construction, only three moving parts.
- High mechanical efficiency, lower horsepower required.
- High vacuum, self-priming. Efficient enough to move volatile gases or extremely viscous liquids.
- Wide range of uses and built-in corrosion resistance.
- Special materials used throughout for long wear, precision fit.

One Basic Design Good for Many Uses

Highly efficient Twin-Lobe design for transfer and metering of liquids, heavy slurries, pastes, soft food solids, gases, and light non-lubricating liquids.

Capacity and Pressure Range

Three models now available. Capacities: 0-56 gpm; Pressures: 0-200 psi.

Send for New Bulletin!

Find out how the new Twin-Lobe pump can save money, improve efficiency of transfer and metering.

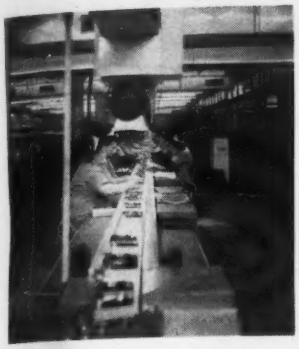
*Pat. Pending

Gaulin MANTON Gaulin MANUFACTURING CO., INC. EVERETT, MASS.

59 Garden Street, Everett 49, Mass.

World's largest manufacturer of stainless steel reciprocating, positive displacement, pressure exchange pumps, dispersers, homogenizers and colloid mills.

6898 on Reader Service Slip



Air in the chocolate packing rooms is held at 62°F and 54 percent relative humidity to prevent handling damage and yet assure comfort for working personnel

processing areas at Whitman's, where unusually low temperatures are required to control the rate at which chocolate hardens and sets.

In the shell plant, chocolate shells are pre-cast in metal molds and cooled to about 60°F. Shells are then filled with cream centers, capped, and stacked in cooling rooms at 35 to 40°F.

In the enrobing operations, precast fondants are coated with liquid chocolate and passed through one of eight cooling tunnels. Here, they are subjected to direct blasts of air at 35 to 40°F at a velocity of 1500 fpm.

Five reciprocating type refrigeration machines serve these areas. Two of 15 tons capacity each provide refrigeration for the shell plant operation. Two of 25 tons capacity each provide refrigeration for the cooling tunnels in the enrobing operation. A fourth, standby unit, has a capacity of 7 tons.

Offices and laboratories

Personal comfort in offices and laboratories require a temperature of 78°F, and relative humidities between 30 and 58 percent. Refrigeration units of 30 and 36 tons capacity are used to serve these areas.

Refrigeration equipment for cooling and air conditioning at Whitman's is supplied by Carrier Corp., Carrier Parkway, Syracuse 1, N.Y.

For more information circle 6899 on Reader Service Slip.

How One Canner Saved $14,250

with an

fmc Continuous Vertical Screw Press

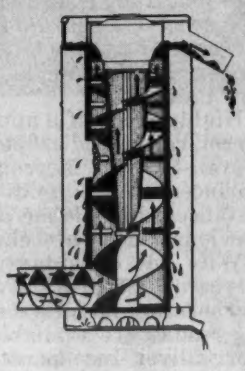
Installation of the FMC Vertical Screw Press has in many cases resulted in the recovery of enough additional tomato juice to pay for itself in one to two seasons! The San Jose Canning Co., San Jose, California is no exception. Last season they incorporated an FMC Vertical Screw Press with their three FMC Pulpers and Finishers—*the performance of which was already established as being peak in the industry*—and averaged 75 gallons an hour additional juice recovery from an average of 40 tons per hour plant input.

In terms of yield per case, this amounts to 0.8 cases per ton more than that recorded the previous season *without* the Vertical Screw Press. And in dollars, San Jose Canning Co. realized a savings of $14,250 during the season—more than two-thirds the cost of their press installed.

"Needless to say, we're highly pleased with the job this equipment is doing for us," says San Jose Canning Co. "In addition to its high recovery, we find our costs of maintenance and cleaning are negligible."

For information on how this FMC Press can capture lost profits in your tomato operations, just write or call your nearest FMC representative—today.

FMC Vertical Screw Press features "Counter-Flow" design for highest fluid recovery. Press cake is quickly and easily formed at start-up; "channeling" is eliminated, preventing loss of unpressed material; flow of fluid is downward—doesn't re-wet the dry pomace. Gentle pressing action means high product quality—even while greatly increasing recovery.



Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

Canning Machinery Division

General Sales Offices:

WESTERN: SAN JOSE, CALIF. • EASTERN: HOOPESTON, ILL.

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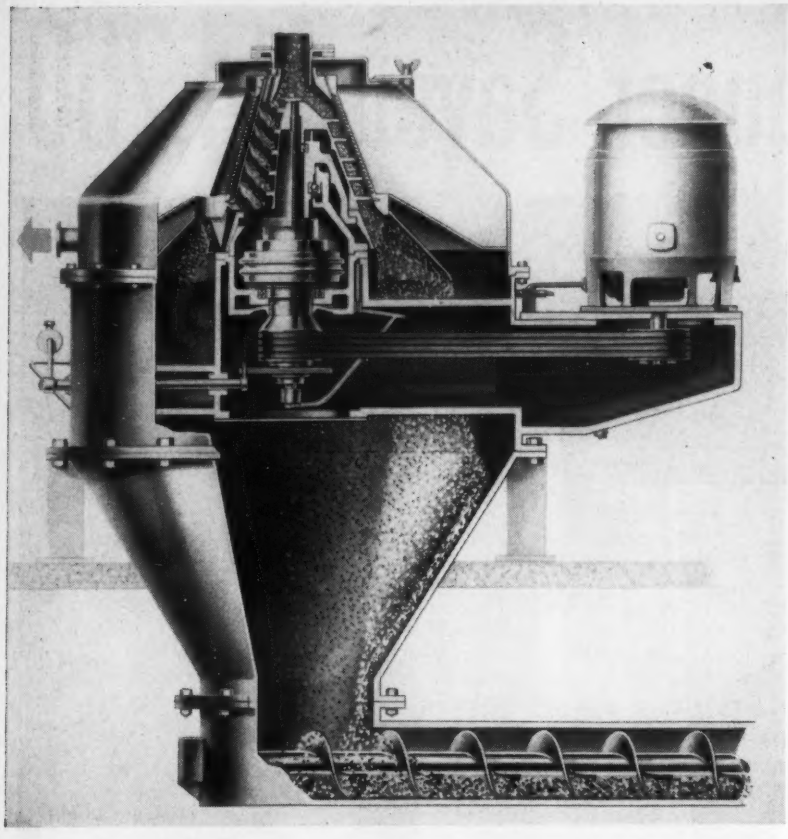

DYNAMIC SEPARATION

for all-round better performance... with the

MERCONE
SCREENING CENTRIFUGE

For fruit and vegetable juice processors, the Mercone Screening Centrifuge is designed to provide continuously high rate separation of feed slurry into dry pulp and liquid filtrate.

Combining the outstanding features of a centrifuge and a screen, the Mercone is a compact, completely enclosed sanitary unit.

Highly successful applications of the unit to orange, apple, carrot, celery and cabbage juice extraction have conclusively proven that the Mercone Screening Centrifuge consistently produces a high yield–high quality product. And in many instances, high labor and high maintenance cost methods previously used are eliminated.

Why not consider now the possibilities of applying "Dynamic Separation"... either to improve your present flowsheet or in future expansion planning? Typical operating results are available. For complete information, write–Dorr-Oliver Incorporated, Stamford, Connecticut.

Mercone—T.M. Reg. U.S. Pat. Off.

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INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U.S.A.

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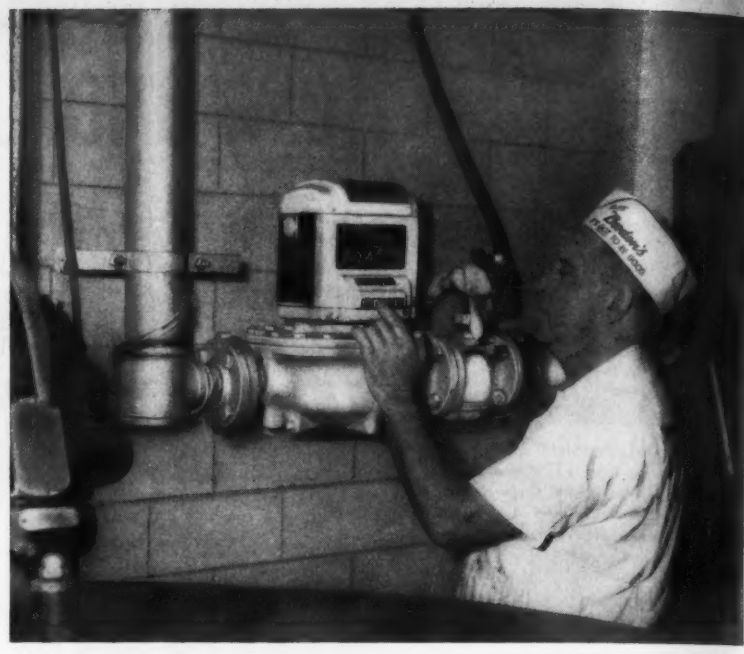


For better taste control Borden uses

NEPTUNE *liquid* METERS

Borden's ice cream earns repeat sales because its good flavor never wavers from batch to batch. By measuring exactly the right amount of corn syrup into the mix, Neptune meters help insure uniform, well-flavored ice cream.

Borden's saves handling heavy bags of corn syrup solids, too, and improves plant housekeeping as well as employee morale... extra bonus values from their Neptune meters. The operator simply pushes the buttons to set the quantity required... opens valve... and the meter shuts off at the predetermined quantity.

Hundreds of plants now depend on Neptune meters to handle over 150 liquids — hot or cold water, soap solutions, oils, syrups, brines, many chemicals, etc. Sizes: ⅝ to 6 in. Capacities: 2 to 1000 gpm. Automatic ticket printing also available.

Neptune meters can benefit your operation wherever liquids flow. Send for free, helpful Metering Bulletin 567-CFP.

neptune liquid METERS

NEPTUNE METER COMPANY
19 West 50th Street, New York 20, N. Y.

Branches in: ATLANTA • BOSTON • CHICAGO • DALLAS • DENVER • LOS ANGELES • LOUISVILLE • No. KANSAS CITY, Mo. • PHILADELPHIA • PORTLAND, ORE. • SAN FRANCISCO (*Millbrae*) • IN CANADA: TORONTO 14, ONT.

6902 on Reader Service Slip

new literature

Livestock slaughter

Advances in "humane" slaughter methods during the past few years are contained in 6-pg folder. Five methods are discussed. Also explained is granting of "Seals of Approval" by the American Humane Assn.

"Progress Report on Improved Methods of Slaughtering" is issued as a joint statement of the American Humane Assn. and American Meat Institute. Copies available from the Institute, 59 E. Van Buren, Chicago 5, Ill.

Answers problems facing potato processors

Papers presented at 8th Annual Potato Utilization Conference have been mimeographed into 128-pg file-size bulletin. Problems discussed at the conference included: storage and transportation for processing, irradiation, sprout inhibitors, after-cooking darkening, and evaluation of potato varieties. Potato product development session had discussions on chips, frozen products, dehydrated mashed and diced potatoes, flour, starch, flakes, and pre-peeled potatoes.

Copy of Proceedings is available from the conference's sponsor, USDA Western Utilization Research and Development Div., Agricultural Research Service, Albany, Calif.

Essential fatty acids and heart disease

Four-page bulletin on essential fatty acids gives condensed background on their role in atherosclerosis.

Example of new trend in thinking on subject: Kinsell, Bronte-Stewart, Sinclair, and others now contend that lipidemia (high blood cholesterol) is caused by a relative deficiency of EFA, or actually,

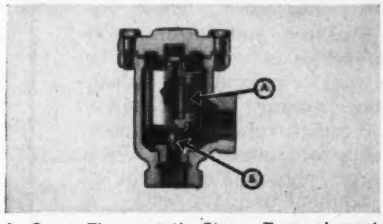
(*Continued on next page*)

Full-range steam traps cut high cost of steam pressure variations

By John W. Ritter, Test Engineer
SARCO Company, Inc.

While boiler room economics dictate that boiler pressures remain constant, the equally sound economics of batch processing may decree that pressures at the equipment vary with the requirement of the process. The attempt to choose a steam trap that is all things to all conditions may result in installing traps that operate inefficiently at either extreme of their pressure range or that require adjustment every time the operations sheet calls for another pressure-temperature setting. Orifice traps represent a somewhat more rational approach to the problem, but often at the price of a continuous discharge of steam, particularly at the low pressures of start-up and shut down. Compromise, adjustment, and steam waste all spell inefficiency in the utilization of steam.

Production-Planned steam trapping, on the other hand, improves efficiency by the use of properly designed and installed thermostatic steam traps. Such traps employ the expansion and contraction of a thermostatic element to operate the discharge valve.



In Sarco Thermostatic Steam Trap, element (A) expands at steam temperature to close valve (B), contracts to permit discharge of condensate.

In the Sarco "Balanced Pressure" Thermostatic Steam Trap a volatile fluid is sealed inside a metal bellows that opens or closes the valve as it contracts or expands with condensate temperature. Near steam temperature, evaporation of the fluid creates an internal pressure greater than steam pressure in the trap body, and the expanding bellows seats the valve. When the condensate cools, the element contracts and opens the valve.

It is evident that at steam temperature pressure inside the element is higher than steam pressure, no matter how the latter may vary. Thus, the trap compensates automatically for variations in pressure.

5810B

Sarco "Balanced Pressure" Thermostatic Steam Traps cut trap maintenance costs and simplify parts inventory. Why? Because the same bellows, head and seat handle steam pressures up to 300 psi — without any need of adjustment for variations in load or pressure.

Other advantages: unmatched capacity/cost ratio (1" size discharges 9,650 lbs/hr. at 10°F below steam temperature, 125 psi). This trap can't air-bind and, when installed with free discharge, can't freeze.

Long life and reliable performance are assured by an exclusive Sarco process for fabricating the one moving part — the thermostat — and by steam-testing of every single trap at maximum rated pressure.

Write for "Literature Kit 1A" today. And remember, Sarco can give you impartial advice on *Production-Planned* steam trapping because . . .

SARCO
COMPANY, INC.
635 Madison Ave., New York 22, N. Y.

Only Sarco makes all 5 types:
Thermostatic • Liquid Expansion • Float Thermostatic
Thermo-Dynamic • Bucket

STEAM TRAPS • TEMPERATURE CONTROLLERS • STRAINERS • HEATING SPECIALTIES

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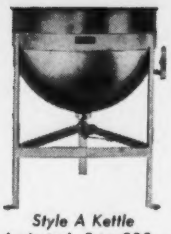
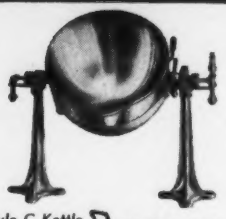
LEE PRODUCTS
For Reduced Processing Costs

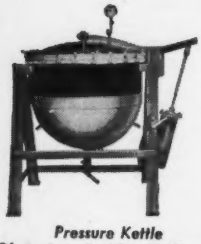
Style CW Kettle
⅔ Jacketed, 80 to 300 gal.



Style A Kettle
⅔ Jacketed, 5 to 500 gal.

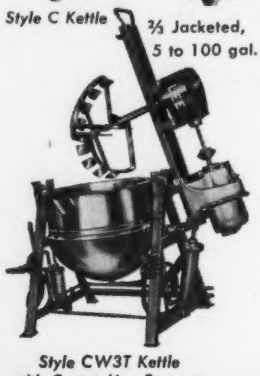


Style C Kettle
⅔ Jacketed, 5 to 100 gal.

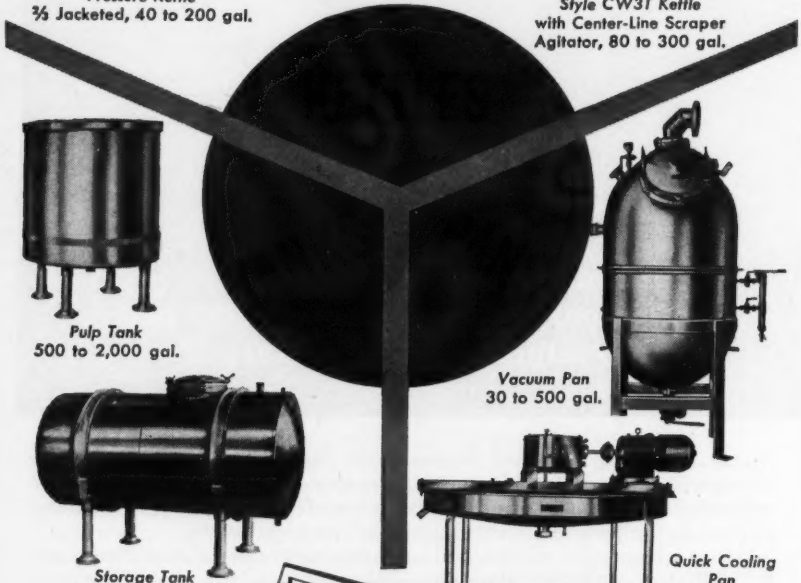


Pressure Kettle
⅔ Jacketed, 40 to 200 gal.

Style B Kettle
Full Jacketed, 10 to 300 gal.



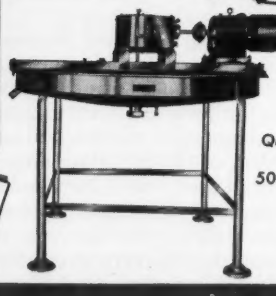
Style CW3T Kettle
with Center-Line Scraper
Agitator, 80 to 300 gal.



Pulp Tank
500 to 2,000 gal.

Vacuum Pan
30 to 500 gal.

Storage Tank
100 to 5,000 gal.



Quick Cooling
Pan
50 to 200 gal.

Write for bulletins on any of the products illustrated.

LEE
METAL PRODUCTS COMPANY, INC.
ALL LEE KETTLES ARE MADE TO A.S.M.E. CODE.

Kettles, Plain and Jacketed | Tanks, Processing and Storage | Agitators and Accessories | Vacuum and Pressure Equipment

414 PINE STREET, PHILIPSBURG, PA.

6904 on Reader Service Slip

new literature

a "nutritional imbalance" between EFA and saturated fatty acids.

EFA Bulletin No. 1, is issued by Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco, Calif.

For your copy simply circle 6905 on Reader Service Slip.

Wood tank handbook

Reference manual of 30 pg has latest data on use of wood tanks. Subjects presented include physical and chemical properties of wood in relation of use of tank, and tank linings, design, and maintenance.

"Wood Tank Reference and Data Handbook" is issued by National Wood Tank Institute, 332 S. Michigan Ave., Chicago 4, Ill.

For your copy simply circle 6906 on Reader Service Slip.

Describes lab to test food processes

Research and testing laboratory to solve problems in drying, evaporation, extraction, mixing, crystallization, and other related food processes is described in 10-pg. Large photos show type of equipment used for tests.

Cat 381, "Customer Service Laboratory", is published by Buflovak Equipment Div., Blaw-Knox Co., 1543 Fillmore Ave., Buffalo 11, N.Y.

For your copy simply circle 6907 on Reader Service Slip.

Applies Teflon films to food equipment

A specialized service has been set up for food processors for the solution of many food production problems with Teflon and related coatings. Information on these coatings as well as the service is contained in 4-pg bul.

"Information Bulletin" is issued by General Plastics Corp., Dept. F-7, 165 Third Ave., Paterson, N.J.

For your copy simply circle 6908 on Reader Service Slip.

Have you changed your address recently?

● If so, you'll want to insure that your copy of FOOD PROCESSING reaches you without interruption. Just send us your new address . . . use the convenient form below.

Please answer all questions in regard to your new affiliation, and in addition give us your former address including company, city and state.

mail this request to
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FOOD PROCESSING
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Chicago 11, Illinois

Former Company Affiliation .....

Former Address .....

Your Name ..... Present Title .....

Present Company .....

Main Product .....

Rating of Company .....

Street Address .....

City ..... Zone No. ..... State .....

(Continued from page 14)
acids, except lauric acid, were found safe and suitable for use, FDA reports.

The standards would permit use of food colors in all products covered. On the labels for ice milk, fruit sherbets and water ices, a statement such as "artificial color added" would be required. (Under terms of the FD&C Act, ice cream was exempted from this labeling requirement.

Artificial flavorings would be acceptable in ice cream and ice milk and must be so labeled. No flavorings could be added to fruit sherbets and water ices. The fruits in them would have to provide the flavor.

Under the standard, ice cream must be made from sweet dairy ingredients, and alkaline neutralizers are not listed as permitted ingredients. (Neutralizers have been added to ice cream mixes where the manufacturer used slightly soured milk or cream as an ingredient.)

Objections to the standards are being received by FDA. These will be studied and considered, and sometime after June 24 a final order will be issued.

(FDA has a limited supply of the complete standards. Free distribution is restricted to 2 copies per request. Larger quantities available for 15c each from Superintendent of Documents, US Government Printing Office, Washington 25, District of Columbia.)

Congress may redefine "preservative"

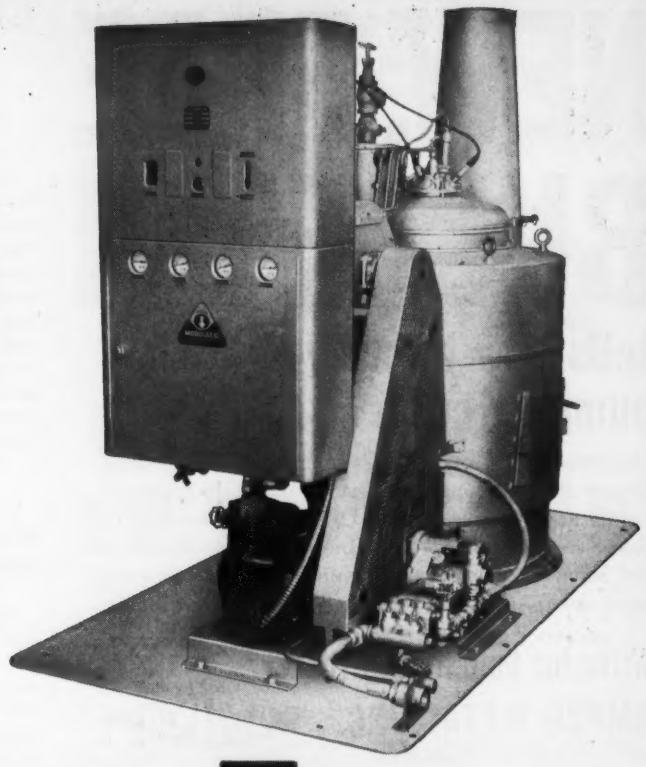
Congress is looking at chemical preservatives with an eye to a new definition of the term. The "Haley bill" (H. R. 9521) would amend the definition of "chemical preservative" so as not to include "any pesticide chemicals when used in or on any raw agricultural commodity which is the produce of the soil." The bill makes no distinction between pre-harvest and post-harvest "preservatives". In effect, it would exempt all

(Continued on next page)

over 13,000 Modulātics in use today prove they

Save

• SPACE
• FUEL
• LABOR

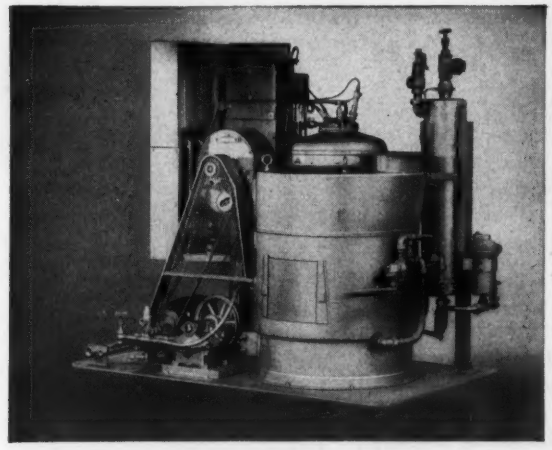


Modulātic needs no enclosure, special foundation, expensive stack. It's shipped fully assembled—just connect and fire up. Base plate, upon which the 60-h.p. unit shown at right is delivered, measures only 4' x 7'.

MODULĀTIC

...world's most compact water tube boiler

Takes No More Space Than A Desk and Chair! This pocket-size power package does a "big-boiler" job to solve your steam problems. Compact, complete, it fits anywhere . . . in unused corners, aisles, balconies . . . to provide all the steam you need, where you need it, when you want it. Fully automatic, push-button operation —set controls for pressure desired . . . Modulātic does the rest. Saves fuel—steam produced only "on demand". Clean, quiet operation . . . practically no maintenance. And for large steam requirements, multiple installations provide same steam capacity, in far less space, than conventional boilers. Single, coordinated control cuts individual units in and out to meet changing steam demands . . . far more economically and efficiently than idling larger boilers.



Sizes range from 10 to 160 h.p.; pressures from 5 to 300 p.s.i. and much more, if required. Maximum floor load, only 150 lbs./sq. ft. Choice of oil, gas, or combination burner. Steam from cold starts in 2 minutes ends early reporting and standby.

Ask for free 12-page Modulātic Bulletin No. 586

VAPOR HEATING CORPORATION
80 East Jackson Boulevard • Chicago 4, Illinois
Offices in principal cities

6909 on Reader Service Slip

NEW, FREE BULLETIN

tells how to cut your pumping costs

Describes new Ampco elastomer- and rubber-lined pumps that (a) cut the cost of handling corrosive liquids and abrasive slurries; (b) will not affect taste or color; (c) will not introduce impurities into the material being pumped; (d) are available from stock — in eight sizes — through your Ampco Pump Distributor.

Write for Bulletin P-6 today!

AMPCO METAL, INC. AMPCO®

DEPT. FP-5, MILWAUKEE 46, WISCONSIN
WEST COAST PLANT: BURBANK, CALIFORNIA
SOUTHWEST PLANT: GARLAND (DALLAS COUNTY), TEXAS P-43

6910 on Reader Service Slip

For the BEST in NEW CONCRETE FLOORS, Architects, Contractors and Cement Finishers *Prefer* HYDROMENT

TAKE THE WORRY AND GUESSWORK OUT OF COLOR IN CONCRETE. ELIMINATE COSTLY PAINTING OF CONCRETE FLOORS.

Hydroment's superiority over other concrete floor toppings is a well established fact.

Here's a Surface with IMPROVED Hardness, Density Wearability, Corrosive, Resistance, and Lasting Appearance.

HYDROMENT IS BEST BECAUSE:

1. Proper balance of quartz and iron aggregate results in an unexcelled wearing course with no rusting or dusting.
2. Optimum grading of quartz and iron aggregate imparts surface density unobtainable in any other concrete hardener.
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food regulations

(*Continued from preceding page*)

fresh produce from declaration requirements.

A spokesman for the United Fresh Fruit & Vegetable Association, the group spearheading the industry effort, pointed to the fact that safety tolerances for pesticide chemicals have been established by law. Therefore, since there is no question of danger to the public health, the labeling requirement is unnecessary. Next move is up to Congress.

Plan expanded inquiry into food pricing

Sen. Estes Kefauver (D., Tenn.) will point his finger at the food industry in the near future. As chairman of the Senate Antitrust and Monopoly Subcommittee, he has called for continuing investigation of "administered prices."

He has already looked into dairy pricing practices in a specific area, and will later move to the whole industry. Also named specifically is the baking industry.

Sen. Kefauver defines the purpose of the hearings as "investigation of pricing practices in industries which may be manipulating prices because of their position, without regard to competitive or other market forces."

Treasury approves treating domestic wines with ion exchange resins

Use of ion exchange resins in columns for treatment of domestically produced wines has been approved by Alcohol and Tax Division of the Treasury Department. Now, US wineries may use Amberlite IR-120 for stabilizing, and Amberlite IR-45 to reduce high natural acidity. The technique has been used extensively in grape-growing areas of Europe.

More information on this use is available from Rohm & Haas Co., Washington Sq., Philadelphia 5, Pa.

NEW FLOOR PATCH

A new chemical-resistant, high-strength patching material that can be applied to concrete floors without preliminary surface preparation is now available from The Garland Co., Cleveland 5, Ohio.

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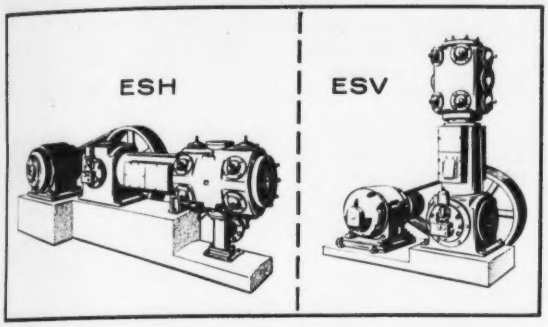

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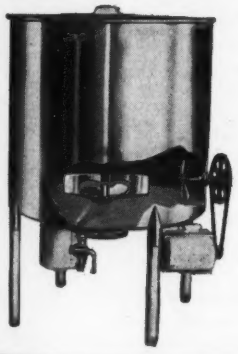

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"Packers bill" referred back to committees

Disputes inside and outside Congress continue on the "packers bill" (see last month's column).

After a year on the calendar, S. 1356 finally reached the Senate floor. Sen. Joseph O'Mahoney (D., Wyoming), the bill's co-sponsor, urged passage of the measure which would transfer jurisdiction over meat packer trade practices from USDA to the Federal Trade Commission.

Charging that USDA is not equipped to enforce the law, he pointed out that Congress's intention in the first place was to give FTC jurisdiction. Packer interests pressured Congress into the change he said.

"The enactment of the bill," according to the Senator, "by the mere fact of restoring the power to the Federal Trade Commission where it belongs, will serve notice upon both packers and chain stores that Congress means that the anti-trust laws should be enforced."

Despite Sen. O'Mahoney's plea for passage, his colleagues voted unanimously to refer the bill to the Agriculture and Judiciary committees for further study.

The House Rules Committee continues to sit on packer bills referred to it, including H. R. 9020, the industry bill.

USDA integrates rules for sugar marketing

Changes in sugar marketing regulations have been announced by USDA. The Department has revised and combined into one regulation all requirements governing the marketing of sugar produced in domestic beet and mainland sugar areas. Also included is the marketing of sugar for local consumption in Hawaii and Puerto Rico.

Copies of the regulation are available from Sugar Division, Commodity Stabilization Service, USDA, Washington 25, District of Columbia.

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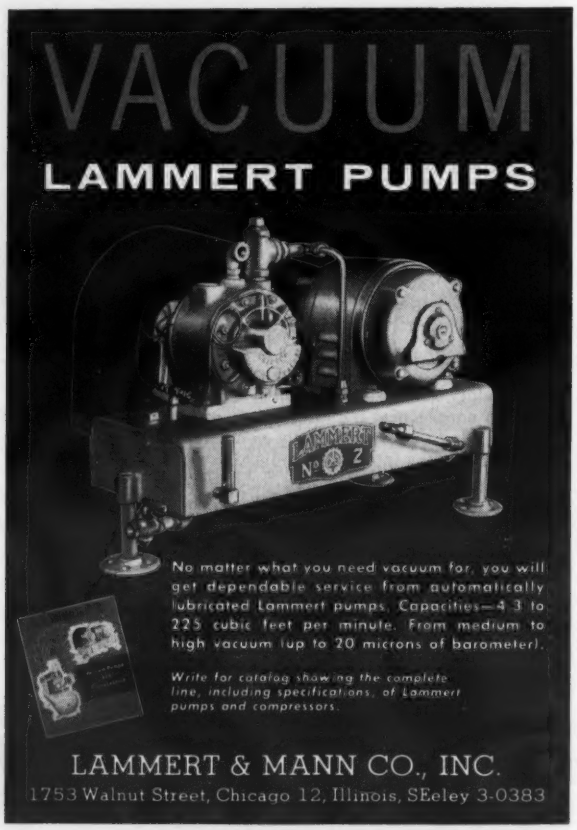
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that's interesting

Pedigreed fertilizers?

Beliefs that chemical fertilizers poison the soil, create unfavorable soil conditions, and damage health of humans and livestock are erroneous says Oscar A. Lorenz, University of California vegetable crops scientist. As long as a plant gets the nutrients it needs, it doesn't know or care what the original source is.

The crops expert supports his assertion by noting that experiments in England over 100 years show almost identical yields for plants fertilized organically and chemically. He also cites the high average longevity in the US, Denmark, and Sweden — countries where chemical fertilizers are widely used.

Noting that organic matter does impart some very desirable properties to soil, Lorenz pointed out, however, that even organic nitrogen must first be changed to inorganic before plants can use it.

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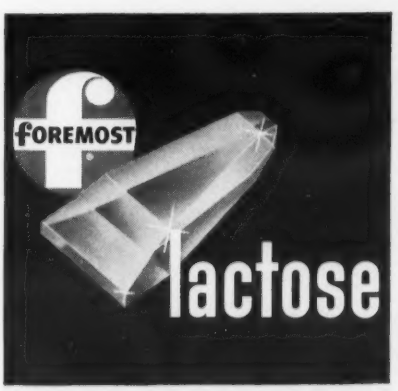

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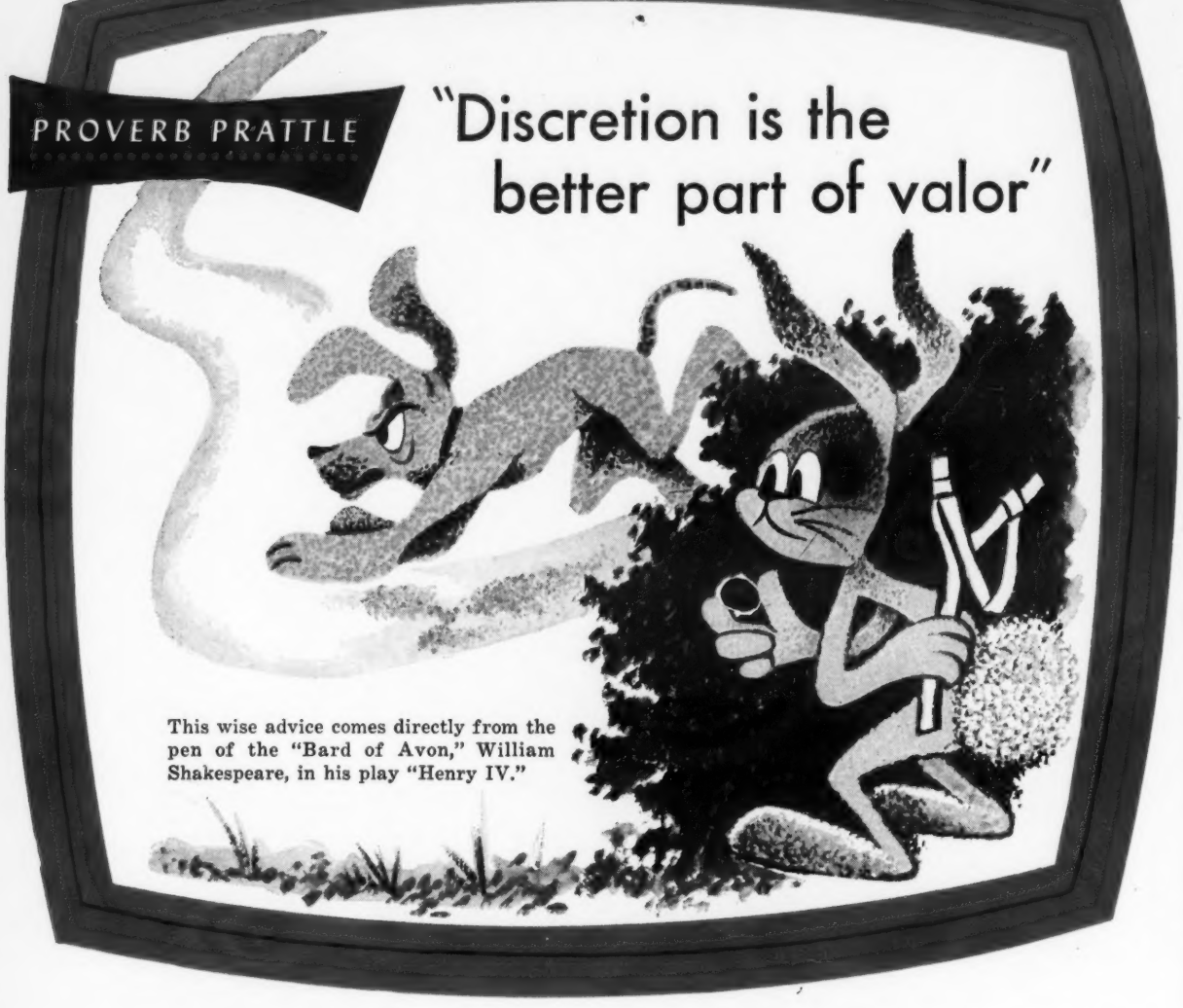

This wise advice comes directly from the pen of the "Bard of Avon," William Shakespeare, in his play "Henry IV."

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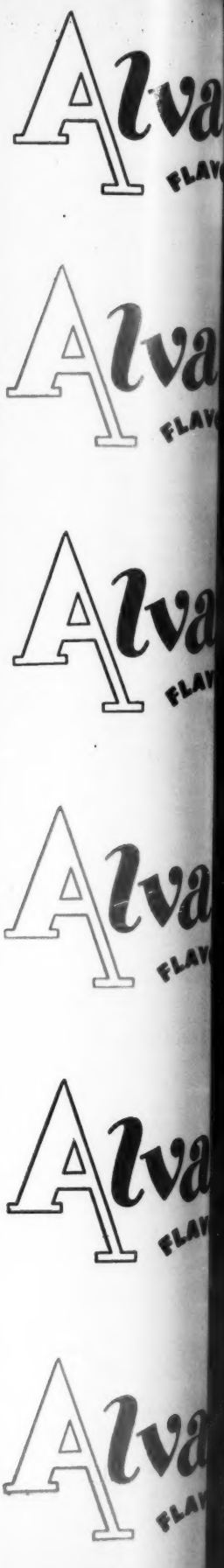
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